

K

1

A NEW
D I R E C T O R Y
F O R T H E
E A S T - I N D I E S :

C O N T A I N I N G,

- | | |
|--|---|
| <p>I. The first Discoveries made in the East-Indies by European Voyagers and Travellers.</p> <p>II. The Origin, Construction, and Application of Nautical and Hydrographical Charts.</p> <p>III. The natural Causes, and observed Phænomena, of the constant and variable Winds, Trade-Winds, Monsoons, and Currents, throughout the East-India Oceans and Seas.</p> | <p>IV. A Description of the Sea Coasts, Islands, Rocks, Harbours, Shoals, Sands, Sea-marks, Soundings, &c. in the Oriental Navigation.</p> <p>V. Directions for navigating in the East-India Seas, to the best Advantage, at different Times of the Year.</p> <p>VI. Directions for sailing to and from the East-Indies, as recommended and practised by experienced Navigators and Mariners.</p> |
|--|---|

T H E W H O L E B E I N G

A Work originally begun upon the Plan of the *ORIENTAL NEPTUNE*,

AUGMENTED AND IMPROVED

By Mr. *WILL. HERBERT*, Mr. *WILL. NICHELSON*, and Others;

A N D N O W

METHODISED, CORRECTED, and further ENLARGED,

B Y

S A M U E L D U N N,

Teacher of the MATHEMATICAL SCIENCES, *London*.

S I X T H E D I T I O N.

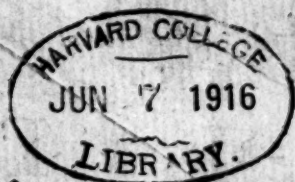
To which is added an APPENDIX.

L O N D O N :

Printed for Messrs. GILBERT and WRIGHT, N^o 148, *Leadenhall Street*.

M D C C X C I.

Nov 1207.91



Bright fund

TO
THE HONOURABLE
THE
COURT OF DIRECTORS
OF THE

United Company of MERCHANTS of *England*,

Trading to the *EAST-INDIES*,

THIS WORK

IS MOST HUMBLY INSCRIBED,

BY THE EDITOR,

SAMUEL DUNN.

THE NEW YORK

LIBRARY

OF THE

NEW YORK

LIBRARY

OF THE

NEW YORK

P R E F A C E.

AS Geography is a description of the Earth, so Hydrography is a description of the Oceans and Seas, with all the things appertaining to them; such as the coasts, rocks, shoals, sands, soundings, currents, winds, calms; and whatever else is incident to that great assemblage of waters, which is bounded by the sea-shores, throughout the world.

In the science of Hydrography, the principal places near the sea coasts are laid down in maps and charts, from accurate astronomical observations; and the interjacent places are delineated by surveys and draughts taken on the spot; the soundings or uneven depths of the seas, are measured; the currents are observed; the constant and variable winds, at different times and places, are noted; and finally, the knowledge of these, and whatever else is incident to the track or path in which a ship is to be conducted, being attained, it is applied for facilitating voyages, from the shorter ones to those of the most distant places.

In the present Treatise, the science of Hydrography is treated in the following order, namely:

1st. An historical account is given of the voyages that were made by Europeans, in order to discover the East-Indies; who the persons were, and the steps, from time to time, by which the discoveries were made.

2d. The reasons for forming hydrographical charts, the principles on which they are constructed, their use, and the improvements that have been made in them by the hydrographers of different European Countries.

3d. The cause of the winds that are either constant or variable; the trade-winds and monsoons; with a large account of them as they are found at sea, over all the oceans that are passed, in voyages to, from, and throughout, the East-Indies.

4th. An ample description of the currents, as they are found in those oceans and seas; with the cause of their formation, changes, and alteration.

5th. A description of the coasts throughout the East-Indies, and other places touched at by the East-India ships; together with an account of the hills, sea-marks, rocks, shoals, sands, soundings, tides, &c. that are necessary to be known, in order either to prevent ships from being lost in those seas, or from prolonging their voyages.

6th. A particular account of the advantages and disadvantages to be expected from the winds, weather, and other causes, at different places of those oceans, and at different seasons of the year.

7th. A large collection of general and particular directions, for sailing to, in, throughout, and from, the Indian Seas, to the greatest advantage, as found by the experience of the best navigators.

As this work hath already gone through several impressions, and the present edition contains whatever was of consequence in the former, it may be necessary to give some account of it here.

The fourth edition, printed in 1775, contains whatever was in any of the former editions; and consists of these parts.

1st. A new Directory for the East-Indies, with general and particular directions, for the navigation of those seas; wherein the French Neptune Oriental has been chiefly considered and examined: with additions, corrections, and explanatory notes, by WILLIAM HERBERT, Hydrographer. The fourth edition with additions, 1775.

2. Sundry remarks and observations made in a voyage to the East-Indies, on board his Majesty's ship Elizabeth, from the beginning of the year 1758, to the latter end of the year 1764: with the necessary directions for sailing to and from India, and in the several ports and harbours thereof. Being a proper supplement to the New Directory for the East-Indies. By WILLIAM NICHOLSON, Master of the said ship. The second edition, with additions, 1773.

3rd. An account of the constant and periodical trade-winds, or monsoons, the land and sea breezes, and the variable winds: together with an account of the setting of the currents, and the strength of them, as they most commonly happen in the different parts of the East-Indies. The whole illustrated by examples taken from the journals of several European and Country ships; shewing the reason why some have made their passages, whilst others in the same season (or perhaps at the same time) have lost, or at least prolonged theirs. By PHILO-NAUTICUS. The second edition, 1774.

4th. An account of the Swift Grab's track, from Bencoolen toward the Seychelles Islands; in which she fell in with the shoals, and Islands of Chagos; determining the situation of those dangers more exactly than heretofore known. By Captain THOMAS NEALE, Commander of the said Grab. In a letter to Mr. William Herbert, late Editor of the New Directory for the East-Indies, 1775.

As the work was thus composed; not only at different times, but by different persons, writing on different parts of this subject, each following one another, and endeavouring to supply the defects of the former, it may be supposed that the reading in the former editions was discontinued through the several parts of the whole; and that an arrangement of the several subjects, in a methodical and natural order, would make it more useful and perfect.

The Proprietor of this Treatise, having committed to my care this alteration, with other improvements, I have used my utmost diligence and attention herein; and hope a comparison with the former editions, will give the Reader entire satisfaction in every thing that relates to me as the Editor.

From the improvements mentioned in my Treatise of Magnetic Variations, it was the more easy for me to judge what expressions, or numbers, for the variation of the compass in this Treatise, were proper to be retained; and what alterations were necessary, where the variation has altered considerably, since these works were first published. Without this, a retention of the former number for the variations, would have made this work very imperfect.

In settling the longitudes of places mentioned in this Treatise, I have consulted the best authorities, and most authentic astronomical observations; and supposed the prime or first meridian, to be that passing through St. Paul's, London, (from which it has been long a custom on board English ships to reckon the longitude at sea, and probably will continue so): but, seeing that the tables in the Nautical Ephemeris are adapted to the meridian of Greenwich, and Greenwich is nearly 6 minutes of a degree of longitude east of London, it will be necessary to make that allowance, in reducing the longitude from the meridian of one of those places to that of the other.

The Charts which are appendant to this work, are published under the following title; namely, A New Directory for the East-Indies, containing general and particular charts of the oceans, seas, straits, coasts, islands, capes, gulfs, bays, harbours, rocks, sands, soundings, &c. necessary to be known in sailing to, from, and throughout, the East-Indies. The whole (originally begun and carried on from the most approved charts and plans, by Mr. W. HERBERT, Mr. W. NICHOLSON, and Others) much improved and augmented by SAMUEL DUNN, Teacher of the Mathematical Sciences, London.

The present Edition, being the Sixth, is printed for William Gilbert, successor to Mr. Henry Gregory, who has spared no Expence in correcting the former Charts, and also added several new ones. Those of Mr. Robertson's,

described in the Appendix to this Work, may also be had together or separate.

By examining the former impressions, both of the letter-press and copper-plates, belonging to this work, it appears that Mr. Herbert had been strictly attentive to the best publications that had been made, both in our own country and abroad, before he began this work; in particular, that the works of that truly ingenious author, M. D'APRES DE MAUNEVILLETTE, had been closely consulted by him; and that he was (from his own observations and experience) able to make additions thereto: and that the errors of other hydrographers, of an earlier date, were too erroneous to be trusted to and followed by him.

Mr. Nichelson's remarks and observations in his voyages to the East-Indies, contained a great quantity of sea knowledge, and deserved much attention. The communications by Philo-Nauticus were of great service for settling the best times for navigating in the Indian Seas. Lastly, the journal of Capt. Neale determined the situation of the Mahé or Seychelle Islands, the Basses de Chagos, and several other places, whose situations before were imperfectly known, but now are laid down correctly enough for the use of navigators.

It being designed to preserve every thing of consequence in this, that hath been in the former Editions, and two of those four authors having delivered a preface to their parts respectively, it may not be improper to give account of them here.

1st. The whole of Mr. Herbert's preface is incorporated into the beginning of this Treatise.

2d. Mr. Nichelson in his preface mentions, that, besides his having used the sea in many other different parts of the world, he was seven years in the Indian seas, and applied himself strictly to the making of observations, charts, draughts, and improvements; that, from these applications, he had been able to give such descriptions of Bombay, Trinkamalay Bay, St. Augustine's Bay, Table Bay, Manilla, and other places, as had never appeared before in any of the East-India Directories.

In treating of the ship's reckoning by the course and distance sailed, he considers it of consequence to have the log-line and half-minute glass duly proportioned to each other; that, if the glass runs 30 seconds, the distance between knot and knot should be 50 feet; that, if it runs 28 seconds, the distance should be 46 $\frac{1}{2}$ feet; and that there should be due care in heaving the log, or errors may arise therefrom that may considerably affect the reckoning.

In

P R E F A C E.

v

In treating of the variation, he says, that the variation in an extensive navigation is as certain a guide as the sun and moon; and that many fatal consequences have befallen ships in the India trade, in not paying due attention to it. He doth not mean the method of taking the longitude at sea, by the help of the sun and moon; because that method hath been much improved since his writing.

His preface concludes, with taking notice of an absurd practice at sea, of navigators keeping their ships (when in the wide ocean) as close to the wind as they can, with their sails as sharp trimmed as they can make them, whereby they will not go above 3 or 4 knots; whereas, by keeping the ship a point further from the wind, she would make less lee-way, and almost double her distance.

3d. Philo-Nauticus hath prefixed no preface to his part of this work.

4th. The whole of Captain Neale's Journal is here given, except the hourly courses and distances sailed by the compass and log.

As this work now stands, it may be considered as consisting of two principal parts: the first containing the Hydographical Institutes, relative to the East-India navigation; and the second, general and particular directions for sailing to, throughout, and from, the East-Indies, by help of those Institutes, so as to avoid dangers, and perform voyages in the shortest time with safety.

These are divided into other less general heads, or chapters, which are not numbered, but entitled only; and, together with the right-hand title of each page, are for shewing what the subject is, at every part throughout the work.

These general heads, or chapters, are subdivided into sections, which are numbered in a successive order, and entitled according to the subject or matter treated of in them.

The navigator or mariner, who would make the best use of this Treatise, either at sea, remote from land, or near the coasts, should be ready at the practice of navigation, and attentively study such parts of it as relate to the places where he happens to be.

By that art, under the latest improvements, he may determine (to a tolerable degree of exactness) the situation or place of the ship, and therefrom be able to judge of the accidents peculiar to the climate, at different seasons of the year.

By the same art, he may approach the coast with less hazard than he would otherwise be subject to; and avoid the dangers in his way, at places where there are no pilots, or where they cannot be had to assist him.

To

To this Edition great care has been taken in correcting all **Typographical Errors** of the former Editions, to which is annexed an Appendix, containing,

First, A Short Account of a Passage from China, late in the Season, down the China Seas, through the Southern Natuna Islands, along the West Coast of Borneo, through the Straits of Billiton, or Clemerits Straits, to the Straits of Sunda, and an Account of the Straits of Allafs, by Mr. Geo. Robertson.

Secondly, An Extract from Lieut. McCluer's Survey (by Order of the East India Company in 1787 and 1788) of and about Bombay Harbour.

Thirdly, An Account of the Gulf of Cambay, by William Augustus Skynner.

Fourthly, Capt. Taylor's Remarks in the Ship Ceres.

Fifthly, A New and most Correct Alphabetical Table of Latitudes and Longitudes of Places, chiefly taken from those in the last publication of Mr. George Robertson, entitled, *Memoir of a Chart of the China Sea*, &c. and the corrected Edition of the Requisite Tables, published by the Board of Longitude, to which is added the Latitudes and Longitude, with the Variations of the Compass, observed on a Passage from Bombay to England in 1784, also in a Voyage in 1788, to the Coast of Guinea, in his Majesty's Ship Adventure, likewise in his Majesty's Ship Marlborough, from Nov. 1790 to Feb. 1791, in a Voyage to Barbadoes, and other Observations made in different Parts of the English and Irish Channels, in the Years 1790 and 1791, by Mr. Charles Roberts, of the Royal Navy.

CONTENTS.

C O N T E N T S.

SECTION I. Page 1.

OF the first Voyages from Europe toward the East-Indies.

SECT. II. Page 4.

Of the first Discoveries on the West Coast of Africa.

SECT. III. Page 5.

Of the first Discoveries near Cape Good Hope, and the South Coast of Africa.

SECT. IV. Page 7.

Of the first Discoveries on the East Coast of Africa.

SECT. V. Page 10.

Of the first Discoveries on the Malabar Coast.

SECT. VI. Page 13.

Of the Construction of Sea-Charts.

SECT. VII. Page 15.

Of the first Meridians of Places, from which Longitude begins to be reckoned.

SECT. VIII. Page 17.

Of the Bearings of Places in the East-Indies.

SECT. IX. Page 23.

The Construction and Cause of the Winds, as they depend immediately on the Action of the Sun.

SECT. X. Page 23.

Of the apparent diurnal Motion of the Sun.

SECT. XI. Page 24.

Of the perpetual Trade-Winds, that blow from East to West, in the Torrid Zone.

SECT. XII. Page 25.

Why the Winds blow north-westwardly or south-westwardly; also, the Cause of Calms at particular Places in the Oceans.

SECT. XIII. Page 26.

Of Winds from 30 to 50 Degrees of North or South Latitude.

SECT. XIV. Page 26.

Of the Line in which the Winds shift themselves, without the Torrid Zone.

SECT. XV. Page 27.

A general Account of the Trade-Winds, and their shifting; by Dr. Halley.

SECT. XVI. Page 29.

Of the Shifting Trade-Winds, and their Dependence on the Sun's Declination; and how they are in the Arabian Sea.

SECT. XVII. Page 30.

How the South and North-western Monsoons are respectively regulated in the Arabian Sea.

SECT. XVIII. Page 34.

How the Shifting Winds, or Monsoons, are propagated in the Bay of Bengal and the China Seas.

SECT.

SECT. XIX. Page 35.

Of the Winds which are contrary to the Trade-Winds and Monsoons; or which are adverse to the general Easterly Winds, and are perpetual.

Of the constant Trade-Winds, Monsoons, periodical Trade-Winds, Land and Sea Breezes, and variable Winds, that commonly blow in the East-Indies.

SECT. XX. Page 37.

Of the constant South-East Trade-Wind in the India Seas.

SECT. XXI. Page 38.

Of the periodical Trade-Winds, or Monsoons, in the India Seas.

SECT. XXII. Page 38.

Of the fair and rainy Seasons in the India Seas.

SECT. XXIII. Page 38.

Of the Changing of the Monsoons in the India Seas.

SECT. XXIV. Page 39.

Of the Land and Sea Breezes in the India Seas.

SECT. XXV. Page 39.

Of the variable Winds in the India Seas, Malacca Straits, the Persian Gulf, and Red Sea.

SECT. XXVI. Page 39.

Of the South-West Monsoon in the India Seas.

SECT. XXVII. Page 40.

Of the North-East Monsoons in the India Seas.

SECT. XXVIII. Page 40.

Of the Monsoons in the Strait of Malacca.

SECT. XXIX. Page 40.

Of the South-East and North-West Monsoons in the India Seas.

SECT. XXX. Page 40.

Of Land and Sea Breezes in the Malacca Straits.

SECT. XXXI. Page 41.

Of Land and Sea Breezes on the Malabar, Guzurat, and Guadel Coasts.

SECT. XXXII. Page 42.

Of the North-West Winds on the Coast of Malacca.

SECT. XXXIII. Page 42.

Of Land and Sea Breezes in the Bay of Bengal.

SECT. XXXIV. Page 42.

Of the Land Squalls from Bengal to Zeloan.

SECT. XXXV. Page 42.

Of Land Squalls, eastward to China.

SECT. XXXVI. Page 43.

Of the variable Winds in the India Seas, at different Times of the Year.

SECT. XXXVII. Page 44.

Of the Winds in the China Seas.

SECT. XXXVIII. Page 44.

Of the Winds in the Red Sea, and Persian Gulf, at different Times of the Year.

SECT.

C O N T E N T S.

ix

SECT. XXXIX. Page 44.

Of Storms and great Calms in the India Seas.

SECT. XL. Page 45.

Of Storms and great Calms in the North Part of the Bay of Bengal.

SECT. XLI. Page 46.

Of Storms and great Calms in the South Part of the Bay of Bengal.

SECT. XLII. Page 46.

Of Storms and great Calms in the China Seas.

SECT. XLIII. Page 47.

Of Calms near the Equinoctial Line in the India Seas.

Of the Monsoons near the Coast of Malabar.

SECT. XLIV. Page 47.

Of the Setting-in of the North-East Monsoon, near the Coast of Malabar.

SECT. XLV. Page 48.

Of Land and Sea Breezes near the Coast of Malabar.

SECT. XLVI. Page 48.

Of Currents near the Malabar Coast.

SECT. XLVII. Page 49.

Of Sailing up the Coast of Malabar to Advantage.

SECT. XLVIII. Page 50.

Of Stretching off the Coast of Malabar.

SECT. XLIX. Page 50.

Of the Setting-in of the South-West Monsoons, near the Coast of Malabar.

Of Monsoons and Currents, near the Island Zeloan.

SECT. L. Page 52.

Of the North-East Monsoon, near the Coasts of Malabar and Coromandel.

SECT. LI. Page 53.

Of the North-East Monsoon, near the Coast of Zeloan.

SECT. LII. Page 53.

Of the North-East Monsoon, in the Gulf of Manara.

SECT. LIII. Page 53.

Of making a Passage to Bengal or Coromandel.

SECT. LIV. Page 54.

Of a Passage near the South Coast of Zeloan, from March to October.

SECT. LV. Page 55.

Of a Passage near the North-East Coast of Zeloan, in May, June, July, August, September, and October.

Of the Monsoons and Currents near the Coast of Coromandel.

SECT. LVI. Page 56.

Of the South-West Monsoon, near the Coast of Coromandel.

SECT. LVII. Page 57.

Of the Setting-in of the North-East Monsoon, near the Coast of Coromandel.

SECT. LVIII. Page 58.

Of the North-East Monsoon, near the Coast of Coromandel.

A general

A general Account of the Monsoons near the Coast of Coromandel, and other Places in the Bay of Bengal.

SECT. LIX. Page 62.

Of the Western Monsoon, near the Coast of Coromandel.

SECT. LX. Page 64.

Of the Eastern Monsoon, near the Coast of Coromandel.

SECT. LXI. Page 66.

Of Monsoons in the China Seas, and near the Philippine Islands.

Of Currents in the East-India Seas.

SECT. LXII. Page 67.

Of Currents in general, in the India Seas.

SECT. LXIII. Page 68.

Of Currents near the Coasts of Africa, Arabia, the Red Sea, Persian Gulf, and Guadel Coast.

SECT. LXIV. Page 68.

Of Currents near the Coast of Guzurat, round to Bombay.

SECT. LXV. Page 68.

Of Currents near the Malabar Coast.

SECT. LXVI. Page 68.

Of Currents in Tutacareen Bay.

SECT. LXVII. Page 68.

Of Currents near the Island Zeloan.

SECT. LXVIII. Page 69.

Of Currents near the Coasts of Coromandel, Golconda, and Orixá.

SECT. LXIX. Page 69.

Of Currents near the Coast of Bengal, from Balasore to Chittigong.

SECT. LXX. Page 69.

Of Currents near the Coast of Arracan.

SECT. LXXI. Page 69.

Of Currents near the Coast of Pegu.

SECT. LXXII. Page 69.

Of Currents near the Coast of Tanassary.

SECT. LXXIII. Page 70.

Of Currents in the Bay of Bengal, from September to Christmas.

SECT. LXXIV. Page 70.

Of Currents in the Straits of Malacca.

SECT. LXXV. Page 70.

Of Currents near the West Coast of Sumatra and Java.

SECT. LXXVI. Page 70.

Of Currents in the Straits of Sunda.

SECT. LXXVII. Page 70.

Of Currents in the Straits of Banca, Bay of Siam, the Coast of China, Cambodia, &c.

SECT. LXXVIII. Page 70.

Of Currents in the China Seas.

SECT. LXXIX. Page 71.

Of the Quantity of Currents in the India Seas.

SECT. LXXX. Page 71.

Of Currents in the Straits of Malacca, Banca, and Sunda.

SECT. LXXXI. Page 71.

Of Currents near the West Coast of Sumatra and Java.

SECT. LXXXII. Page 72.

Of Currents in the Bay of Bengal, from April to November.

SECT. LXXXIII. Page 72.

Of Currents near Zeloan.

SECT. LXXXIV. Page 72.

Of Currents between the Coasts of Africa and Malabar.

SECT.

C O N T E N T S

xi

- SECT. LXXXV. Page 73.
Of Currents in the Persian Gulf.
- SECT. LXXXVI. Page 73.
Of Currents in the Red Sea.
- A Description of the East Coast of Africa,
from the Equinoctial to the Straits of
Babel-Mandel.*
- SECT. LXXXVII. Page 73.
Of the River dos Fugos.
- SECT. LXXXIX. Page 74.
Of Cape Baffes.
- SECT. XC. Page 74.
Of Cape del Gada, or de la Goada.
- SECT. XCI. Page 74.
Of Cape Dorfui.
- SECT. XCII. Page 75.
Of Cape Guardafui.
- SECT. XCIII. Page 75.
Of Cape Mount Felix.
- SECT. XCIV. Page 75.
Of Cape St. Peter.
- SECT. XCV. Page 76.
Of the Island Mette.
- SECT. XCVI. Page 76.
Of Burnt or White Island.
- SECT. XCVII. Page 76.
Of Cape Aden.
- SECT. XCVIII. Page 77.
Of Cape St. Anthony.
- SECT. XCIX. Page 77.
Of Cape Babel-Mandel.
- SECT. C. Page 77.
Of Babel-Mandel Strait.
- SECT. CI. Page 78.
Of Mocha Road.
- Of the Coasts of Arabia and Persia.*
- SECT. CII. Page 78.
Of the Winds and Currents near the
Coasts of Arabia and Persia.
- SECT. CIII. Page 79.
Of Maculla Bay.
- SECT. CIV. Page 79.
Of Shahar Point.
- SECT. CV. Page 80.
Of Cape Boccouas-Hova, or Bogath-
fua.
- SECT. CVI. Page 80.
Of Kissen or Kaifun Point, and Cape
Fortuack.
- SECT. CVII. Page 80.
Of Capes Doffar and Moribat.
- SECT. CVIII. Page 81.
Of the Island Soccatra.
- Of the Coast of Arabia from Curia Muria
to Cape Rofalgat.*
- SECT. CIX. Page 82.
Of the Coast of Arabia.
- SECT. CX. Page 82.
Of Cape Rofalgat.
- SECT. CXI. Page 83.
Of Cape Muskatta or Muskat.
- Of the Coast of Persia.*
- SECT. CXII. Page 83.
Of Cape Jasques or James.
- SECT. CXIII. Page 83.
Of Cape Guadel or Goadel.

- SECT. CXIV. Page 84.
Of Sandy River.
- SECT. CXV. Page 84.
Of the Coast of Guzurat.
- SECT. CXVI. Page 84.
Of Diu, and Point Courba.
- SECT. CXVII. Page 85.
Of Peram Isle, and Gogo.
- Of the Coast from Point de Gall, or Gaula,
on the Island Zeloan, to Surat.*
- SECT. CXVIII. Page 85.
Of Point de Gall, or Gaula.
- SECT. CXIX. Page 86.
Of Winds and Currents near Point de Gall.
- SECT. CXX. Page 86.
Of Cape Comorin, and Point Cadiapatam.
- SECT. CXXI. Page 87.
Of the Island Enciam, the River Tangaypatnam, and Point Veniam.
- SECT. CXXII. Page 88.
Of Winds on the Coasts of Malabar, Canara, &c.
- SECT. CXXIII. Page 88.
Of Anjanga, Coislan, and Cochien.
- SECT. CXXIV. Page 90.
Of Cranganor, Peniana, and Callicut.
- SECT. CXXV. Page 91.
Of Mahe, Moelan, and Tillichery.
- SECT. CXXVI. Page 92.
Of Cananor, Mount Dilla, and Mangalor.
- Of the Coast of Canara.*
- SECT. CXXVII. Page 92.
Of St. Mary's Island, and Pigeon Island.
- SECT. CXXVIII. Page 93.
Of Carwar, and the Islands of Angedive.
- Of the Coast of Decan.*
- SECT. CXXIX. Page 94.
Of Cape Ramas, Serpent Islands, and Goada, or Alguada Fort.
- SECT. CXXX. Page 94.
Of Goa, and the Burnt Islands.
- Of the Coast of Concan.*
- SECT. CXXXI. Page 95.
Of the Points Vigiador and Ixdruc.
- SECT. CXXXII. Page 95.
Of the Angrian Corsairs.
- SECT. CXXXIII. Page 95.
Of Geirapour, or Rajapour.
- SECT. CXXXIV. Page 96.
Of the Bar of Choul, and Coulaba Island.
- SECT. CXXXV. Page 97.
Of Bombay, Bacaim, or Bassien, and Barfabas.
- SECT. CXXXVI. Page 98.
Of Cape St. John, the Road of Surat, and Surat.
- Of the Laccadive Islands.*
- SECT. CXXXVII. Page 99.
Of the Laccadive Islands.
- SECT. CXXXVIII. Page 99.
Of the Island Seubelipar, and Calpenia.
- SECT. CXXXIX. Page 100.
Of Malique Island.
- SECT. CXL. Page 103.
Of the Banks of Cherbaniang, and Padua.
- Of the Laccadive Islands, and the Channels between them.*
- SECT. CXLI. Page 104.
Of the Islands Seuhelipar, Malique, and the Ten-degree Channel.
- SECT.

- SECT. CXLII. Page 105.
Of the Islands Calpenny, Kelay, and Nine-degree Channel; and Soundings near Malabaa Coast.
- SECT. CXLIII. Page 106.
Of Manara, Aripa, and the Island Caridien.
- SECT. CXLIV. Page 108.
Of Point Calapeten, the River Chilo, and Morabel.
- SECT. CXLV. Page 109.
Of the River Cayanel, Negombo, Colombo, Galketin, Panture, and Calitura.
- SECT. CXLVI. Page 110.
Of Barberin Island, Point Cocachiere, and Ragamma.
- SECT. CXLVII. Page 111.
Of Point de Gall, Gala, or Gaula and Red Bay, in the Island Zeloan.
- SECT. CXLVIII. Page 112.
Of Matura River Dondre-Head, Gaelies Bay, and Dickwell.
- SECT. CXLIX. Page 113.
Of the Bays of Nielwell and Coenacker, Tangel Point, Waelue River, Mago Point, and Elephant Hill.
- SECT. CL. Page 114.
Of the Great Baffes and Little Baffes.
- SECT. CLI. Page 116.
Of Julius Nave, the Point of Low Bank, Aganis, Aregam, Poawegam, and Batacalo.
- SECT. CLII. Page 117.
Of the unequal Depths East of the Island Zeloan and Vendeloos Bay.
- SECT. CLIII. Page 117.
Of Provedien Island, Cotiaris Point, Trinquemale Bay, and Pigeon Island.
- SECT. CLIV. Page 118.
Of Rio-Carty, Molewall, Point Pedra, and Karycal River.
- Of the Coast from Point Pedra, the North Point of Zeloan, to the Entrance of the Ganges.
- SECT. CLV. Page 119.
Of Canimere Pagoda, Negapatnam, and Karey-Kal River.
- SECT. CLVI. Page 121.
Of Trankabar, Cabripatnam, Triminyas River, Coloran River, Porto Novo, and Fort St. David.
- SECT. CLVII. Page 123.
Of Pondicherry.
- SECT. CLVIII. Page 126.
Of Conjimere, Alemparva, Sadras, the Seven Pagodas, Couvelan, and Meliapour.
- SECT. CLIX. Page 127.
Of Madras or Fort St. George, the Reef of Trifou, the Bank and River of Pullicut.
- SECT. CLX. Page 129.
Of Circara-Hoeria, Armegon, Calettoer, Divelan, Cerara, Gondegam, Montopoly, and Petapoly.
- SECT. CLXI. Page 131.
Of Point Divy, Massulipatan, and Narfapour.
- SECT. CLXII. Page 132.
Of Point Godvarin, Narfipelle, Vatare, Bimelipatnam, Ticacoel, Calreigapatnam, and Alefare.
- SECT. CLXIII. Page 134.
Of Pondy, Barva, Sommaveron, Karapar, and Manikpatnam.
- SECT. CLXIV. Page 135.
Of Jagranet Pagoda, the Black Pagoda, Falie Point, and Point Palmiras.

- SECT. CLXV. Page 138.
Of Ballafore Road, the Nelgringe Mountains, and Piply Road.
- Mr. Nichelson's Description of the Coasts of Malabar, Canara, Decan, and Concan.*
- SECT. CLXVI. Page 140.
Of Cape Comorin.
- SECT. CLXVII. Page 141.
Of Point Cadiapatam, Two small Islands, and a Rock.
- SECT. CLXVIII. Page 141.
Of Coleche Bay, Ruttera Point, Anjanga, Quiloan, Porca, Cochin, and Panian.
- SECT. CLXIX. Page 144.
Of Callicut, Tillecherry, Mahé, Mount Dilla, and Cananore.
- SECT. CLXX. Page 146.
Of Mangalore, Annanore, Bassalore, the Permira, and St. Mary's Rocks.
- SECT. CLXXI. Page 148.
Of Pigeon Island, Hog Island, Annanore Road, Anjedive Isle, Cape Raymas, and St. George's Island.
- SECT. CLXXII. Page 150.
Of Goa Road or Bay, Alguarda Fort, the Anchorage, Tides, and Soundings.
- SECT. CLXXIII. Page 152.
Of the Vingorla Rocks, Gariah, Rajapour, and the Eoris Dobs and Z.
- SECT. CLXXIV. Page 154.
Of Dubull, Fort Victory, Dunde-Rajapour, Choul, Hunary and Canary Islands, and Bombay.
- SECT. CLXXV. Page 157.
Of Point de Gall, and the Mountains of Zeloan.
- SECT. CLXXVI. Page 158.
Of Woody Island, Red and Matura Bays, Dunder-Head, Nivelles, and Niebwell.
- SECT. CLXXVII. Page 159.
Of the Soundings between the Coast of Zeloan and Great Baffles.
- SECT. CLXXVIII. Page 161.
Of the Great Baffles, the Elephant, Little Baffles, Chimney and Pagoda Hills.
- SECT. CLXXIX. Page 163.
Of Julius Nave, the Friar's Hood, Aguin Peak, and Batacalo River.
- SECT. CLXXX. Page 164.
Of Vendelos Bay, the Sugar-Loaf, Provedien Isle, Foul Point, Trinkamalay Bay, Pigeon Island, and Mole Wall.
- SECT. CLXXXI. Page 166.
Of Point Pedra, and Negapatnam.
- SECT. CLXXXII. Page 168.
Of Calderoon, Karycal, Trankabar, and Porta Nova.
- SECT. CLXXXIII. Page 171.
Of Fort St. David's, and Cuddalore.
- SECT. CLXXXIV. Page 171.
Of Pondicherry, Sadras, Alemparva, the Seven Pagodas, and St. Thomas.
- SECT. CLXXXV. Page 174.
Of Madras or Fort St. George, and Pullicat.
- Of the Coasts of Arraken and Ava. (+)*
- SECT. CLXXXVI. Page 146 *.
Of the Eastern Coast of the Gulf or Bay of Bengal, Arrakan River, and the Negraille or Negrais Isles.
- SECT. CLXXXVII. Page 148 *.
Of the Coast from the Negraille or Negrais Isles, to Siriam River.
- SECT. CLXXXVIII. Page 148 *.
Of the Andaman Isles, and others, in the Gulf of Bengal.
- SECT.

(+) The Reader is desired to refer to the folios marked with an * thus, p. 146 * to p. 175 * from Sect. CLXXXVI. to Sect. CCI. occasioned by an error in the paging.

- SECT. CLXXXIX. Page 151 *.
Of the Nicobar Islands.
- SECT. CXC. Page 152 *.
Of the North Part of the Bay of Bengal.
Of the West Coast of Sumatra, by Capt. Manley
- SECT. CXCI. Page 155 *.
Of Bencoolen, Sillabar, Buffalo, and Manna Points.
Of the Coast, in Sailing from Bencoolen toward Mocha-Mocha.
- SECT. CXCII. Page 157 *.
Of Single Demoon Point, Catown, and Siblat, Ippoe, Bantall, Frederickett, and Mocha-Mocha.
Of Islands in the Indian Ocean.
- SECT. CXIII. Page 159 *.
Of the Comero Islands.
- SECT. CXCIV. Page 161 *.
Of the Bassas de Palram, and Bassas de Amber.
- SECT. CXCV. Page 161 *.
Directions for Ships bound to Bombay.
- SECT. CXCVI. Page 162 *.
Cautions to be observed in Sailing toward Bombay.
Of the Seasons, Winds, and Weather, &c. near St. Augustine's Bay; or between Madagascar and the Continent; in all the Months of the Year.
- SECT. CXCVII. Page 162 *.
Of the Winds and Weather in the South-West and North-East Monsoons.
- SECT. CXCVIII. Page 164 *.
Of Sandy Island.
- SECT. CXCIX. Page 165 *.
Of St. Christopher's Isle.
- SECT. CC. Page 167 *.
Of Joanna Road.
- SECT. CCI. Page 167 *.
Capt. Thomas Neal's Account of his Passage, in the Swift Grab, from Bencoolen toward the Basses de Chagos, and the Seychelle Islands.
- SECT. CCII. Page 170.
An Abstract of the Swift Grab's Journal, from Bencoolen toward the Seychelle Islands.
The best Methods and Times for navigating Ships from Port to Port in India, in Consequence of the Winds and Currents.
- SECT. CCIII. Page 176.
From Bombay to the Red Sea, in November and December.
- SECT. CCIV. Page 176.
From Aden to Mocha.
- SECT. CCV. Page 176.
From Bombay to the Red Sea, in January, February, March, and April.
- SECT. CCVI. Page 177.
From Mocha to Judda.
- SECT. CCVII. Page 178.
From the Malabar Coast to the Red Sea.
- SECT. CCVIII. Page 178.
From Surat and Bombay to Persia.
- SECT. CCVIX. Page 179.
From the Malabar Coast to Persia.
- SECT. CCX. Page 180.
Of Working along Shore, near the Coasts of Malabar and Persia.
- SECT. CCXI. Page 181.
In the Gulf of Persia, from October to March.
- SECT. CCXII. Page 182.
The Case of the Grandison, Capt. Fenton, and others,

SECT.

SECT. CCXIII. Page 183.

From Bengal to the Coast of Coromandel, &c. in August, September, October, November, December, January, February, March, and April.

SECT. CCXIV. Page 189.

From Bengal to Surat and Bombay, in August, October, December, January, and March.

SECT. CCXV. Page 198.

From the Coromandel Coast to Bengal, in January, February, March, April, May, June, July, August, September, and October.

SECT. CCXVI. Page 207.

Of Voyages from the China Seas, and other Eastern Parts, to Bengal.

Mr. Nichelson's *Account of a Passage from Madras to and from the Island Diego Rayes, or Rodrigues, in the South-West Monsoon.*

SECT. CCXVII. Page 210.

Of the Passage from Madras to the Island Rodrigues.

SECT. CCXVIII. Page 211.

A Description of the Island Rodrigues.

SECT. CCXIX. Page 215.

Return from Rodrigues to Madras.

SECT. CCXX. Page 215.

Of a passage from Madras to Trinkamalay in the Island Ceylon, in order to shun the petty Monsoon.

SECT. CCXXI. Page 217.

The Method of making a Passage from Trinkamalay to Madras or any other part of the Coast of Coromandel, in the North-East Monsoon.

SECT. CCXXII. Page 217.

A Description of Trinkamalay Bay, the Harbour of Back Bay, &c.

SECT. CCXXIII. Page 219.

Directions for a Ship coming from the southward, bound into Trinquemalay or Trinkamalay Harbour.

SECT. CCXXIV. Page 220.

Directions for ships coming from the northward, and bound into Trinkamalay Harbour.

SECT. CCXXV. Page 221.

Marks for turning into Trinkamalay Harbour.

Mr. Nichelson's *Directions for making a Passage from the Coast of Coromandel to Bombay, in the South-West Monsoon.*

SECT. CCXXVI. Page 224.

Of ships stretching off the Coast near Madras.

SECT. CCXXVII. Page 227.

Directions for Ships bound to the Malabar Coast from Acheen-Head.

SECT. CCXXVIII. Page 227.

Mr. Nichelson's Description of the Road and Harbour of Bombay.

SECT. CCXXIX. Page 228.

Instructions for knowing the Land about Bombay Harbour.

SECT. CCXXX. Page 229.

Of the Dangers going into and out of Bombay Harbour.

SECT. CCXXXI. Page 231.

Directions for a large Ship to round the Reef of Old Woman's Island, into Bombay Road and Harbour.

SECT. CCXXXII. Page 232.

Directions for turning into Bombay Harbour.

SECT. CCXXXIII. Page 233.

Directions for standing in toward the Eastern shore of Bombay Harbour.

SETC.

SECT. CCXXXIV. Page 234.
Marks for anchoring in Bombay Harbour.

SECT. CCXXXV. Page 235.
Directions for Sailing out of Bombay Harbour.

SECT. CCXXXVI. Page 236.
Marks for coming into Bombay Harbour in hazy Weather.

SECT. CCXXXVII. Page 237.
The setting of the Tides, in and out of Bombay Harbour.

SECT. CCXXXVIII. Page 237.
Of Wooding and Watering at Bombay.

SECT. CCXXXIX. Page 238.
Of Provisions and Refreshments at Bombay.

SECT. CCXL. Page 238.
Other Directions for knowing the Land, going into Bombay Harbour.

SECT. CCXLI. Page 240.
Directions for ships that are obliged to sail from Bombay in the Time of the South-West Monsoon, and bound to the Southward.

SECT. CCXLII. Page 243.
Directions for Vifiagapatam Road.

SECT. CCXLIII. Page 243.
Directions for rounding the Reef off Point Palmiras, and so into Ballasore Road, by Night or Day by Captain Jonathan Ranfon.

SECT. CCXLIV. Page 246.
Directions for Sailing from Point de Gall to Cape Comorin, or from Cape Comorin, to Point de Gall in either Monsoon. By Mr. Nichelson.

SECT. CCXLV. Page 247.
Directions for Coasting along Zeloan, from Point de Gall to Caltura, and crossing from thence to Cape Comorin, in the North-East Monsoon.

SECT. CCXLVI. Page 248.
Directions for ships bound to the Coast of Coromandel, from between Madagascar and the Coast of Africa.

SECT. CCXLVII. Page 249.
Directions for Sailing toward Land in the Indian Ocean, from the Nicobar Islands.

SECT. CCXLVIII. Page 250.
Directions for Sailing from the Coast of Coromandel to the Coast of Malabar, Malacca, Batavia, and other Places.

SECT. CCXLIX. Page 251.
Directions for Sailing from the Coromandel Coast to Acheen.

SECT. CCL. Page 256.
Directions for Sailing to different Places near the Gulf of Bengal, at different Seasons of the Year.

SECT. CCLI. Page 259.
Directions for Sailing from the Coromandel Coast to Mergui, from the Beginning of August to the Middle of September.

SECT. CCLII. Page 263.
Directions for Sailing into, and coming out of, the Bay of King's Island.

SECT. CCLIII. Page 264.
Directions for Sailing to and from Mergui.

SECT. CCLIV. Page 266.
Directions for Sailing from the Coromandel Coast to Mergui and Junk-Seilon, in the North-East Monsoon.

SECT. CCLV. Page 269.
Directions for Sailing from Madras to Pegu, in the Little and Great Monsoons.

SECT. CCLVI. Page 272.
The Situation of Ouras.

General and Particular Directions for Sailing to, in, and from, the East-Indies.

SECT. CCLVII. Page 273.
Directions for Sailing from the Lizard to

to the Island Madeira, the Canary Islands, Cape de Verde Islands, and the Equinoctial Line.

SECT. CCLVIII. Page 273 *.

Directions for Sailing into Porta-Praya Road, in the Island St. Jago.

SECT. CCLIX. Page 274.

Directions for Sailing round the Cape of Good Hope.

SECT. CCLX. Page 278.

Directions for going into Table Bay, at the Cape of Good Hope.

SECT. CCLXI. Page 281.

Directions for Sailing into Simon's Bay, on the Western Coast of False Bay.

SECT. CCLXII. Page 283.

Directions concerning the Cape of Good Hope and the Southernmost Part of Africa.

SECT. CCLXIII. Page 283.

Directions for Sailing from off the Cape of Good Hope, toward the Inner Passage for India.

SECT. CCLXIV. Page 284.

Directions for proceeding toward the Inner Passage, or between Madagascar and Africa.

SECT. CCLXV. Page 286.

Directions for avoiding the Bassas de India,

SECT. CCLXVI. Page 288.

Directions for making the Land of Madagascar and St Augustine's Bay.

SECT. CCLXVII. Page 289.

Directions for Sailing into St. Augustine's Bay.

SECT. CCLXVIII. Page 292.

Directions for Ships that go the outward Passage to India; or for those that are bound to China, through the Straits

of Lombock, Bally, or Sunda: as communicated to Mr. Nichelson, by an experienced East-India Commander.

SECT. CCLXIX. Page 294.

Directions for the Straits of Lombock; by the same.

SECT. CCLXX. Page 295.

Directions for going through the Straits of Bally; by the same.

SECT. CCLXXI. Page 297.

Directions for the Back of Banca.

SECT. CCLXXII. Page 297.

Directions for the Straits of Sunda.

SECT. CCLXXIII. Page 298.

Directions for Ships bound to India, or China, early in the Season.

SECT. CCLXXIV. Page 299.

Directions for Ships bound to India, passing the Cape of Good Hope, late in the Season.

SECT. CCLXXV. Page 300.

Directions for Sailing toward China, through the Straits of Sunda, Banca, &c.

SECT. CCLXXVI. Page 314.

Directions concerning a Sand to the Westward of the Two Brothers, on which the Sandwich was a-ground in 1749-50.

SECT. CCLXXVII. Page 315.

Directions for the Straits of Banca.

SECT. CCLXXVIII. Page 320.

Directions for Sailing from the Straits of Banca to Pulo Timoan.

SECT. CCLXXIX. Page 322.

Directions for Sailing from Pulo Condore toward China, to the Eastward of the Paracels.

SECT. CCLXXX. Page 329.

Captain D'Auvergne's Account of the Ship Scarborough striking on the South

South Maroona, off the Coast of Luconia,
September 12, 1748.

SECT. CCLXXXI. Page 331.

Directions for Sailing through the
Straits of Sunda, to Bantam, or Batavia,
in the Western Monsoon.

SECT. CCLXXXII. Page 333.

Directions for Sailing from Batavia to
the Straits of Banca.

SECT. CCLXXXIII. Page 333.

Directions for Sailing from Pulo Sapata
toward Canton in China, in the South-
West Monsoon, and back again in the
North-East Monsoon.

SECT. CCLXXXIV. Page 334.

Prognostic of a Tuffoon on the Coast
of China. By Antonia Pascal de Rosa,
a Portuguese Pilot of Macao.

SECT. CCLXXXV. Page 335.

Directions for Sailing to Malacca from
the westward, in the westerly Monsoons.

SECT. CCLXXXVI. Page 342.

Directions for Voyages to Malacca, in
the Easterly Monsoon.

SECT. CCLXXXVII. Page 345.

Directions for returning from Malacca
to the Coast of Coromandel, Bengal, and
other western Parts, at different Seasons
of the Year.

SECT. CCLXXXVIII. Page 346.

Directions for Sailing from Malacca
to Pulo Timoan, through Governor's
Straits, commonly called the Straits of
Sincapour.

SECT. CCLXXXIX. Page 356.

Captain John Hallet's Directions for
Sailing through the Straits of Dryon.

SECT. CCXC. Page 358.

Directions for Sailing from Pulo Ti-
moan to Siam, in the Western Monsoons.

SECT. CCXCI. Page 361.

Directions for returning from Siam to
Pulo Timoan, in the Eastern Monsoons.

SECT. CCXCII. Page 362.

Directions for Sailing from Pulo Ti-
moan to Pulo Condore, in the Western
Monsoons.

SECT. CCXCIII. Page 363.

Directions concerning Pulo Condore.

SECT. CCXCIV. Page 367.

Directions for Sailing in the Westerly
Monsoons, from Siam to the River of
Cambodia, Tonquin, and China, to the
Westward of the Paracels, along the
Coast of Cambodia, Tfiompa, and
Cochinchina.

SECT. CCXCV. Page 379.

Directions concerning the Islands lying
off the Coast of Tfiompa.

SECT. CCXCVI. Page 381.

Directions concerning the Coasts of
Tfiompa and Cochinchina.

SECT. CCXCVII. Page 386.

Directions for the Passage to China,
between the Island Hai-Nan and the
Paracels.

SECT. CCXCVIII. Page 389.

Directions for Sailing from the Island
Sanciam, or St. John's, to Amoy; with
the Description of the Coast of China,
from one to the other.

SECT. CCXCIX. Page 392.

Directions for Sailing from Madras to
Manilla, through the Straits of Malacca,
in the South-West Monsoon. By Mr.
Nichelson.

SECT. CCC. Page 413.

Directions for Ships bound to Manilla,
crossing the China Seas.

SECT.

SECT. CCCI. Page 419.

Directions for Sailing from Manilla to the Straits of Sincapour and Malacca, in the North-East Monsoon.

SECT. CCCII. Page 430.

Directions for Sailing from China to India, or Europe, through the Straits of Sunda.

SECT. CCCIII. Page 438.

Directions for Sailing from Bombay, or Surat, for China, through the Straits of Malacca.

SECT. CCCIV. Page 439.

Remarks made in Sailing from Bombay to the Cape of Good Hope through the Inner Passage, or between Madagafcar and the Coast of Africa. By Mr. Nichelson.

SECT. CCCV. Page 446.

Directions for Sailing from the Cape of Good Hope to the Islands St. Helena, Ascension, and from thence toward the British Channel. By the same.

SECT. CCCVI. Page 451.

Directions to be observed coming into the English Channel. By the same.

APPENDIX.

A short Account of a Passage from China, &c. Page 455.

Remarks for Gaspar Passage, by Mr. Robertson. Page 460.

Remarks after passing the SE Point of Banka, &c. Page 462.

Strait of Allas. Page 465.

Account of Bombay Island and Harbour, by Mr. McCluer. Page 467.

Directions for navigating the Gulph of Cambay, by W. Augustus Skynner. Page 472.

Capt. Taylor's Remarks in the Ship Ceres. Page 476.

Remarks on the Monsoon in the Bay of Bengal. Page 482.

A New correct Table of Latitudes and Longitudes. Page 484.

A Table of Latitudes and Longitudes, with the Variations of the Compaſs, &c. Page 493.

Observations of the Variations of the Compaſs near Land, &c. Page 495.



A NEW
D I R E C T O R Y
FOR THE
E A S T I N D I E S, &c.

L. *Of the first Voyages from EUROPE toward the EAST INDIES.*

BEFORE the time the Portuguese had doubled the Cape of Good-Hope, the advantage which a trade with the Eastern nations in India would bring to Europe was little known; and till that time they had only ventured along the coasts: the great difficulty which they imagined might happen in traversing the vast Eastern Ocean, made them abandon the projects which they had formed of visiting these foreign places.

Those nations who had their own interest most in view, were contented with drawing to themselves the profit of the trade carried on with Asia, by means of the Red Sea, and the Persian Gulf. Alexandria by this means was a very flourishing place; out of the ruins of which, Venice has since been raised from a small hamlet to one of the most opulent states in Europe: there went yearly large fleets from thence to the coasts of Asia Minor and Egypt, where the Eastern traders began to enjoy the great gains which they found arise from the exchange

given for their goods by the western people. That wise republic, being convinced that she owed all her wealth to the situation of the place, and fleets which were yearly sent out, took all the pains possible to improve it, and in time established it so well, as to oppose the force of several powers joined together, at different times, with a design to destroy it.

As the riches of India spread themselves over Europe, Europeans became desirous of having settlements in a country, wherein Nature seemed prodigal in all things that might satisfy mankind.

The compass being now in use, emboldened the mariner to leave the coast; and being certain to return back to the same place, he soon got the better of the obstacles which (according to the general opinion) served as hindrances to the ancients.

Some Normans and Biscayans having ventured to the Canary Islands, about the end of the 14th century, and given an account of the beauty and fertility of them, a desire for new discoveries became general. Excited by this motive, John de Bethencourt, accompanied by several other Normans, in the year 1401, ranged the coast of Africa, as far as beyond Cape Non, made a descent on the island Lacerotta, conquered and fortified it, but finding himself too weak to subdue the rest, returned to France to ask for assistance. At that time, (about the end of the reign of Charles VI. and during that of Charles VII.) the troubles which were in the kingdom filled their minds, and they could not undertake a foreign expedition. Seeing then his endeavours were in vain, he addressed himself to Henry III. of Castile, who supplied him with sufficient force to carry on his project, to get the sovereignty of these islands, and the title of king, upon condition that he and his successors should do homage to the crown of Castile.

While the chief maritime powers of Europe were losing, by their divisions and wars, the advantages which might have been got by new settlements abroad; Portugal, one of the most inconsiderable among them, put herself in a good condition to profit by it. They, as well as Spain, were long a prey to the incursions of the Moors. This power was delivered first from them, carrying their victorious arms even into those barbarous nations.

The infant Don Henry III. son of John I. king of Portugal, taking advantage of these favourable circumstances, laid the foundation of the glory which in after-ages his nation so deservedly gained. This prince was not only distinguished from other men by his superior genius, but also by his virtue and bravery: his love for the sciences evidently appeared, by his encouraging men of learning with his favour and liberality. He founded
several

several Academies for the instruction of youth, and gave part of his revenue for their support: in short, never did prince shew himself more attached to the love of arts and sciences than he did. Far from employing the leisure hours which the tranquility of his kingdom afforded him, in pleasure and diversions, he betook himself to studies of different kinds, of which mathematics was the chief. He quitted the court that he might give himself up entirely to science, retired to one of his country seats, near the little town of Sagres, by Cape St. Vincent, and being accompanied by learned men, he executed all the projects which he had before begun, endeavouring chiefly to perfect himself in navigation. The notions which he had of geography, together with the conversation of some Moors, who had penetrated very far into Africa, gave him a very favourable opinion of the settlements that might be made on these coasts. Full of these hopes, the prince thought he could do no better for his kingdom, which was confined within very narrow limits, than to increase his power and wealth by new discoveries, and foreign settlements. These advantages, however great they might appear, were not the only ones which determined him: animated with a zeal for his religion, he was glad of an opportunity to propagate it, by converting many millions from Idolatry and Mahometanism.

The great ignorance of navigators at that time was the least obstacle which that prince got the better of. In order to dispose their minds for enterprises of this kind, he was under the necessity of destroying their notions of the globe being divided into five zones, which doctrine the ancient geographers had established. Between these zones, they reckoned only two temperate or habitable; they thought those near the poles were inaccessible, by reason of the great cold at all times; and the torrid zone as a region of fire, where all was burnt up by the heat of the sun. This opinion, however ridiculous it now appears, was then the established doctrine: from thence proceeded the fears, and chimerical notions, which prevented them from making new discoveries. Notwithstanding the pains he took to get good seamen and the best of pilots, yet most of them, intimidated by the least appearance of danger, returned home; others contented themselves with landing on the coast of Africa, on this side Cape Non, where they ended their voyage: so that he saw himself frustrated, for several years, in the hopes he had entertained of the success of his enterprize. But this did not make him quit his design, nor discontinue mildness towards his captains; concealing his discontent, he encouraged them by his promises.

II. *Of the first Discoveries on the WEST COAST of AFRICA.*

In the year 1418, chance, more than skill or the courage of the seamen, made a discovery of the island Porto Sancto. John Gonzales Zarco, and Trifan Vaz, gentlemen of the infant's household, set sail for doubling Cape Bajador; but a tempest drove them off the coast and threw them upon this island, to which they gave the name of Porto Sancto after they landed, by reason of its affording them shelter when they thought themselves near lost. The news of this discovery soon reached Portugal, and gave great joy. During their stay at Porto Sancto they discovered Madeira, which lies near it; and they were sent to take possession of it. The largeness and the fertility of the latter made them give it the preference: they sent people to inhabit it; also beasts, sugar-canes, and Malmsey vines. The care which was taken for the establishment of these islands, was the cause of the delay of those on the coast of Africa, beyond Cape Bajador, which Gilles Anes doubled in the year 1433. Seven years after that, Anthony Gonzales, and Nugno Trifan, landed at Cape Blanco. Those that afterwards went beyond this, by their discoveries overcame the prepossessions of the people about the impossibility of penetrating into the torrid zone. The great gain they had made with the people of these countries, appeased the murmurs of several of the members of the government, who were already resolved to abandon these enterprises, because, without any profit to the government, it had cost immense sums.

In all times such persons have been found enemies to new schemes, whatever profit might be expected from them: those who fix their minds on the immediate success of their enterprises, count as nothing the distant fruits which may be reaped from them. Many states have been reduced by a mistaken policy, and brought to the necessity of carrying, even to their enemies, part of those riches, which they might have kept, if they had had courage and constancy. Don Henry, without minding the reasons which they employed to turn him from his design, continued very attentive to it; but he had the misfortune of all eminent men, whom death seizes in the middle of their projects. He died in the year 1463, and 67th year of his age; and Portugal was deprived of a prince whose study was the good and interest of his kingdom.

III. *Of*

III. *Of the first Discoveries near CAPE GOOD HOPE and the SOUTH COAST of AFRICA.*

John II. nephew to Don Henry III. being at length king of Portugal, considering the advantages of the trade with Africa, entered into all the designs of his uncle, being very assiduous in making new discoveries. It had been pushed as far as Cape St. Katharine, situate in 2° south latitude, during his father Don Alphonso's life; and as far as the river Zaire, in the first of his reign; but his chief design was the discovery of the East Indies. The geographers, which he had about his court, assured him it might be easily done, by sailing round the coast of Africa. They supported their opinion by a chart which the Moors had given to Don Henry; this was sufficient to confirm the king in his resolutions.

Another motive was, the idea all Europe was filled with of a mighty Christian monarch, better known by the name of Prester John, than by the situation of his dominions. Don John was resolved to spare no pains to discover who this prince was: he sent for this purpose Peter Covillan, and Alphonso de Parva, who took their journey by Alexandria, and through Arabia, as far as Aden; from whence the first passed on to the Indies, the other to Ethiopia: but Covillan returned without having discovered any thing, and Parva died on the road. Don John dispatched others by sea; these were Bat. Diaz and John Infant: each had the command of a ship, as well as a store-ship, to prevent the pretence of returning for provisions, &c. Their orders were, to sail round the coast of Africa from the river Zaire, and make discoveries; to enquire very particularly the way they should go to the kingdom of Prester John; and to set up flags every where, as a mark of possession. An obstacle, which should have been prevented, hindered these navigators from discharging their commission. The negroes, who served them for interpreters, did not rightly understand the language of the new countries on which they landed; nevertheless Diaz coasted along, and came as far as a cape which appeared to him to set bounds to the coast of Africa: he gave it the name of Cape Tormentos, by reason of the tempests and large seas he found near it. His zeal would have carried him still farther; but his crew mutinying, obliged him to return to Portugal, where he arrived in December, in 1487, sixteen months and seventeen days from the time he first set out. He was very well received by the king, and the name of Cape Tormentos changed into that of Good Hope, intimating the great hopes they had from this discovery. Ten years

years passed away without any notice being taken of it; and the prince died at the time when the preparations were making for the improving their discovery. Emanuel duke of Beja succeeded him, and under his reign these discoveries were brought to perfection. When he came to the crown, the good of his nation became his chief study; and he was resolved to establish a new dominion, rejecting the advice of some of his courtiers, who were averse to all schemes of this kind.

Beja fitted out three ships, of a much stronger make than ordinary; with a pink, which was to serve as a store-ship. The late king had appointed Vasco de Gama to command this expedition. Don Emanuel, persuaded that the success of his enterprise depended on a proper chief, approved of Gama, he being a man of fortune, merit and capacity, great courage and daring intrepidity. There went in company with him his brother Paul de Gama and Nic. Coello.

The king, on their setting out, told them he hoped their conduct would confirm his good opinion, animating them with the promise of great rewards: he then gave Vasco his instructions. They embarked amidst a numerous concourse of people, who were all in tears, being persuaded they were so many victims going to certain death, according to the terrible account Diaz and his companions had given of the Cape of Good-Hope. They sailed from Lisbon in July, 1497. Vasco directed his course towards the Canaries, then towards the Cape de Verd: he landed and refreshed his men at St. Jago; from whence he steered south, to cross the equinoctial line, and fell in with the coast of Africa; but not knowing how to make a proper use of the winds which blew in that hemisphere, he spent four months before he arrived in the bay of St. Helena, where they took in fresh water, and then set sail for the Cape of Good-Hope.

The season of the year not being favourable, they met with contrary winds and currents, which had very nearly obliged them to return back. The mutinying of the crew would have been sufficient to have overturned all their measures; but Vasco, indefatigable amidst the greatest dangers, surmounted the first of these by his knowledge in navigation; the other, by punishments which he inflicted on the chief of the mutineers. He doubled, without any accident, that famous Cape, November 25, 1497; from whence he went into the bay of St. Blaze, which is about 60 leagues beyond the cape. He had a design to stay a while at this place, but found some difficulty in getting refreshments: he therefore went to a neighbouring harbour, and stayed there till the 18th of December. A few days after he left this place, he met with a violent storm, which

which he had the good fortune to get the better of; and on Christmas-day following he made the coast again, which he called Nativity, as was the custom when lands were discovered on any particular day. For the same reason, he gave the name of King's river to a large one, which he entered on the Epiphany of the following year. Other travellers gave names to those places they landed at, according to the nature of the inhabitants.

IV. Of the first Discoveries on the EAST COAST of AFRICA.

Beyond the bay of St. Blaze, the land forms a promontory which is the south extreme of Safala. Vasco had great difficulty to double it, on account of currents which set in upon the shore. He was therefore, for fear of being shipwrecked, obliged to stand off the coast of Safala, and did not make the land again till he was near the mouth of a river which he named Bons Signaux, because of the good intelligence he received there. The people of that country were more civil than any others he had met with: they made him understand (by some Arabian words) if he kept towards the north, he would meet with white men, and ships such as his own. This animated them with new hopes, being now tired with only meeting forlorn creatures, whom they could not understand, neither procure from them more than would just keep them alive. A disease to which they had been entire strangers, began now to range amongst them, namely, the scurvy, of which some died, but most recovered.

After having refreshed and refitted the ship, they went to Mosambique, where they arrived in a few days. This little island, situate near the continent, and which the Portuguese now make one of their chief settlements, was almost entirely inhabited by Moors, who had made use of it in their trade to Safala. Ibrahim, king of Quiola, kept a governor there, in order to command and preserve the trade. When this governor saw the ships of Gama, he sent an officer to enquire what they were, and finding them to be Portuguese, formed a design to destroy them; and in order to succeed, he thought it best to use dissimulation: he kindly received those who were sent ashore, promising them all in his power, with two pilots to conduct them in, or where they had a mind to go. These measures were scarcely concerted, when they began to see into their bad designs. The complaints which Gama had made to the governor, of some outrages that had been committed

mitted on some of his people, being rejected by insults, and followed by a shower of arrows, made the General fire several shot at the village. The governor by this means became more civil, granting to Vasco every thing he demanded, and also a pilot to conduct him: after which he set sail. They suspected their guide might be treacherous, and therefore resolved either to intimidate him by threats, or bring him over by promises; but they soon discovered his design, by his running the ships between the islands and the rocks, on which they would infallibly have been lost, if they had not been on their guard. The admiral, being convinced of the perfidy of the pilot, whipped him severely with cords: this made him repent of his breach of trust, and promise to conduct the ship to Quiola, a considerable city, where he assured them they would find all sorts of necessaries. The pilot made no doubt but they would very soon know there what had passed at Mosambique, and would undoubtedly revenge it; but the wind not favouring them, he thought it best to go to Mombasse, where he made them hope for the same supply as at Quiola.

Mombasse, at that time, was subject to the Moors, who had their king independent of that at Quiola: it was very populous and flourishing, situate in a deep bay, forming a very good port, on each side of which was a well-built fort: the houses being built with stone, in a pretty taste, afforded an agreeable prospect. To avoid giving surprise, Vafques did not think fit to enter immediately into the port: he anchored in the road, that he might observe what passed in the town, and so be able to take his measures. The king sent an officer to compliment the admiral on his arrival, with a tender of his service. After the first compliments, the messenger told him the great inconveniency which would attend his ships in an open road, such as where he lay, saying it would be much more convenient, as well as safer, to go into the port. Gama, to prevent suspicion, promised it; but deferred the execution under specious pretences. Notwithstanding the care which the Portuguese took to hinder the pilot from having any conference with those of Mombasse, he found means to inform them of what passed at Mosambique, so as to inspire them with notions of revenge and hatred. Then they meditated to take the ships; but, as it was difficult for them to bring it about, if they did not come into the harbour, they therefore redoubled their arguments to persuade them to this.

The admiral, sufficiently informed of the state of the harbour, and strength of the Moors, at length determined to go in. On the day appointed for this purpose, great numbers of country boats, finely adorned, with instruments of music and armed men, came before the ships, as if to pay their respect. Several
of

of the Moors came on board, notwithstanding the care that was taken to hinder them, seeming very well pleased with the preparations for weighing the anchor, and believing themselves already masters of their prey; when an odd accident, all on a sudden, destroyed their hopes, and turned them into fear. The admiral's ship, being under weigh, did not answer her helm: by this she sheered so near some rocks, that he was obliged to come to an anchor, and furl his sails. The Moors, seeing them in a great hurry, suspected they were discovered; and fear seizing them, they immediately jumped overboard to get to their boats. Vasques, by this, discovered his narrow escape; and, as the Mosambique pilot had got away from the ship, he concluded it to be through his means that the Moors had taken these resolutions. He thanked God for his deliverance, and then set sail to seek protection in some other port. Some days after his departure he took two boats going to Mombasse, which served his purpose. At his approach, most of the Moors in the boats jumped into the sea; but some remained, and gave him necessary instructions: they told him he was not far from a city called Melinda, the king of which received courteously all strangers; that he might get provisions there, and pilots to conduct them to the Indies. In this hope, guided by their prisoners, they steered their course for the place they told them of. He found Melinda to be a neat city, situated in a plain, surrounded with gardens.

As soon as the admiral was come to an anchor, he sent a messenger to compliment the king, and inform him of the reason of his voyage. This prince was a venerable old man, of a mild and affable carriage, and singular probity. He seemed pleased with the arrival of the Portuguese, especially when they told him that an European monarch was seeking his protection and friendship. The regard due to sovereigns, demanded that Gama himself should visit the king; but as he had already proved, that the seeming friendship of the East is not much to be depended on, he delayed going ashore. The king himself by his great age and infirmity, being confined to his bed, the prince his son came half way to the ship, to confer with the admiral; and both exchanged the greatest marks of friendship, the sincerity of which the event sufficiently shewed.

There were then in the harbour of Melinda, four India ships, in which there were some Christians of St. Thomas, and a Moor of Guzurat, very skilful in navigation. Vasques, in the conference he had with them, learned several important things to his expedition. He shewed them his Astrolabe, or Cross Staff, by which he observed the latitude; the use of which was begun under the reign of John II. They did not seem surpris'd at it, but shewed him something

more curious of the same kind, which was common among the Arabians, who sailed in the Red-sea. The Portuguese have omitted giving any account of this method. Some pretend that Vasques learned from them the use of the Loadstone. This opinion is ill-founded. Whatever other discoveries we may owe to the Portuguese, it is certain the virtue of the Loadstone was well known in Europe two centuries before.

V. *Of the first Discoveries on the MALABAR COAST.*

During the stay Vasques made at Melinda, they received from the inhabitants all manner of refreshments: these contributed greatly to restore them after their fatigue. The prince, to give them some mark of his friendship, procured a pilot to conduct them safe to India.

Every thing being ready for his departure, Vasques with the two other ships sailed; and in 19 days, having favourable winds, he descried the mountains of Calicut, and anchored in the road the day following, being the 18th of May, 1498, ten months and a half after his departure from Lisbon, to the great joy of all: for this they returned God thanks.

Calicut was at that time a very considerable city, the metropolis of a powerful empire, which has now lost all its ancient splendor. The Samorin, to whom it still belongs, formerly was one of the chief princes of Indostan. The kingdom is situate along the sea-coast of Malabar: the people had a very great trade; this brought immense riches to Calicut, and they lived in all the pleasures of luxury.

Gama, on his arrival, went to pay his respects to the emperor, and acquaint him with the cause of his voyage. The interest and self-conceit of that prince was too much flattered not to return a favourable answer. He gave orders for receiving the admiral, and shewed him all marks of honour, usual to ambassadors from the most powerful kings. The day appointed for receiving him being come, he was conducted with great pomp to the palace, and from thence to the hall of audience, where the emperor waited for him. After the first compliments were past, he desired him to deliver his credentials to any of his ministers that he thought fit. Gama, thinking the honour of his master was here concerned, refused to comply with it; representing, that kings ought to commune directly with kings, without the interposition of ministers of state. The Samorin, being informed of this delicacy, retired with some of his officers.

private

private apartment, and sent for the admiral. They read the letter from the king of Portugal; and the prince, to whom it was explained, answered it in most obliging terms. But there was one essential thing wanting, namely the presents, which were always sent by ambassadors to Eastern Princes, before whom it is not the custom to appear empty-handed.

Vasques excused himself by the uncertainty of his arrival in India, adding that it was near 100 years since they had been finding out a passage, and had been always before this time forced to put back; that, if the king of Portugal had known his fleet would have succeeded this time, he would not have failed to have sent very considerable presents. This excuse seemed to satisfy the emperor; and he ordered the ambassador to be treated with particular marks of distinction, for facilitating of commerce, and what else he might want.

The Moors were displeased with the arrival of the Portuguese in that country; for it was through them Europe received the greatest part of the riches from this country: they did all in their power to prevent this commerce, and gained over to their interests, by bribery, the chief ministers of the Samorin; so that the court all on a sudden changed their behaviour towards the Portuguese, and considered them as no better than pirates, and made use of their indigence as a proof.

Vasques was informed of the design which the Moors were carrying on against him, by one of their party on whom he could much rely, named Monzaed, a native of Tunis, who acted as broker at Calicut, and was attached to their interest from their first arrival. He spoke the Castilian language perfectly well, and served as an interpreter. He was very zealous in all their affairs; and his fidelity was very conspicuous, in letting the Portuguese know the designs the Moors had formed against them. Hereupon Vasques determined to depart; but, as an affair of this nature requires much delicacy, he at length obtained permission, upon leaving a pledge for his return. He likewise got a letter from the Samorin to the king of Portugal. He first went to the islands of Anchediva, or India Diva, to careen, and take in water; and then steered for the coast of Africa: but he made not so quick a passage back as he had done coming, being delayed by calms, so that he reached Magadoxa with great difficulty: sailing along the coast, he put in at Melinda, where the prince again received him with great marks of esteem, and sent an ambassador to the king his master. From Melinda the fleet came back the same way. In passing Mosambique, one of the ships, called the St. Raphael, struck on a sand-bank near the island of St. George, and was lost: the crew was saved, and put on board the two other ships, which

steered for the Cape of Good Hope. They doubled it in March, 1499, the season being then more favourable than before.

Having got the better of this terrible passage, they were now expecting to taste the fruits of their native country. They steered for the equator, fell in with the islands of Azores, and refreshed at that of Tercera. Vasques had the grief to see his brother die at this place, whose good qualities made him universally regretted. They at length arrived at Lisbon in the month of September, after having been out 26 months. The scurvy and other disorders had so weakened his crew, that out of 170 men who set out, only 55 returned to Portugal. Nic. Coello, who arrived before him, had already informed the king of the success of the voyage. That prince sent down all the nobles of his court to meet Vasques, and ordered his return to be celebrated by public rejoicings. He made him count of Vediguiera, and admiral of India; and added a pension of 1000 crowns. Those who accompanied him were also greatly rewarded; and, to perpetuate the memory of this discovery, he built a stately church, and dedicated it to the Virgin Mary. They now found it possible to sail from Europe to the East-Indies; and, by the accounts of the beauty and riches of that country, were confirmed that a profitable trade might be carried on. They then fitted out a large fleet, and embarked a sufficient number of able men to resist those who should oppose their settling. They added to these wise measures all that could bring navigation to perfection; for on that depended all the advantages of this discovery. By these precautions they saved the lives of many. Thus far the different expeditions made towards this discovery have been considered; it remains to give an account of the progress made in navigation, and at the same time let you know what new methods have been taken in this work for its use and advantage.

The knowledge of the load-stone, and use of the mariner's compass applied to navigation, it is true, has been of great use to bring it to perfection; but this was not sufficient to overcome the difficulties to be met with in long voyages. By the compass the pilot shaped his course; but the distance remained uncertain, being only calculated by estimation. It was only after the use of the Astrolabe, or Cross-staff, for observing the latitude, that there was a possibility of correcting the errors of navigation in long voyages: and there was yet another thing wanting, equally necessary for instruction and safety, a representation of the sea-coasts and islands, that the pilot might continually see before his eyes his true course, and so be able to shun the danger.

These

These reasons gave rise to hydrographical charts, of which the Infant Don Henry was the first inventor. The geographical maps, known long since, helped them in this; but then it was with difficulty they could make use of them, because their construction was not well adapted for the use of navigators.

The first sea-charts were those which have since been called plain charts; to distinguish them from those now made use of; and because in their construction they have no regard to the convexity of the globe, but the portion which they comprehend is reduced to a plain surface; the meridians being represented as straight lines parallel to each other, and the degrees of longitude equal to the degrees of latitude upon every parallel.

Every mariner took care to insert in this chart all new discoveries, the latitude he had observed them in, with all the bearings of the coasts, together with the sand-banks or rocks which he met with.

VI. *Of the CONSTRUCTION of SEA CHARTS.*

Navigation being now of such extent, the size of the former charts were not sufficient to contain all the seas which they had to run over: to remedy this, they were obliged to make the scale less; but such a reduction made the objects confused, or at least too small to be of use: this determined them to make charts of particular parts on a larger scale. These last were not only useful, but absolutely necessary for persons who sail along coasts, or through straits which require more ample description. By these means, although navigation became more easy, yet there were great faults: one was, that the principle on which the charts were made, was erroneous; and the difference of longitude of the chief ports was not exactly shewn. To prove the former, take notice, that the meridians of the globe are circles, intersecting each other at the poles, and making the degrees of longitude smaller, in proportion as they are distant from the equator; whereas in the plain charts (as hath been already observed) the meridians are supposed to be straight lines, and the degrees of latitude equal to those of the equator.

This error indeed is not so considerable in the torrid zone, especially when the charts do not comprehend any great space; but otherwise it is necessary to take notice of it: for which reason the navigator, that he may not be deceived in his reckoning, must reduce the leagues of departure into the degrees of the parallel on which he sails; and, if the course be oblique, of the middle latitude, between the place of his departure and that bound to.

Among

Among the various methods made use of to correct these charts, that now in practice is the best, and has with justice been preferred to all others. It consists in augmenting the degrees of the meridian in the same proportion as those of the parallels diminish. Every degree of latitude thus augmented, becomes the just measure for reducing the degrees of the equator, answerable to those of its corresponding parallel. An explanation of this method at large may be seen in the Philosophical Transactions, No. 219, which, though generally called Mercator's projection, is justly attributed to Mr. Edward Wright.

You must not confound, with the plain charts, those which determine the distance, upon any parallel, by one common measure; because a certain number of leagues taken on the equator are always equal to the same quantity taken on any parallel whatever. In the use of these last, they do not account by degrees of longitude, but make use of them only as a scale of leagues, to measure the distances on the parallels of latitude.

It is not so easy to remedy the second fault of the charts, the consequences of which are more to be dreaded: for, besides that the first was known, the mariner had rules to correct it by; but in the other he was uncertain of the true longitude of the places bound to; the methods of observing it were not common, and for the most part above the capacity of the navigators of that age. The hydrographers were obliged to deduce the longitude from the course and distance, which they obtained from ships journals; but this being uncertain, became more so, as the length of their voyages encreased; and though in time their charts were more correct, yet the astronomical observations made in different places, prove that the charts of places but little frequented, may have errors, and want new corrections.

After the Dutch had taken most of the Portuguese settlements, their chief care was to procure their charts, and to make new ones of all those ports where they had any trade. That republic, ever mindful of its own interest, knew full well that on the improvement of this article depended the success of all their voyages; but still, whatever care they took to make these correct, they remain very imperfect; and one cannot but admire how a nation, whose navigation is so considerable throughout the world, should to this day trust their lives and fortunes on performances so imperfect. Of those that are published, the general chart by Peter Goos is esteemed the best: this most of their navigators still make use of. As for their particular charts, they are mostly manuscripts.

The Portuguese and Dutch are not the only charts we have of the Eastern ocean. The collection by Thornton, commonly called the English Pilot, although

although deficient in many places, is much esteemed by navigators, as it contains several charts of the coast on a large scale; nevertheless, the latitude and bearings of many considerable places being very faulty, it requires to be corrected.

In the making of new charts, three methods have been used to determine the situation of places. The first is astronomy, founded on the best observations. The next may be called geography, which consists in fixing by triangles those places which have been observed, with those whose situation is certain: this method has been made use of along the coasts, by observing the angles which the several capes and noted points make with each other, or with the meridian line; and gives the situation sufficiently exact. The third method is more uncertain, but is had recourse to for want of either of the former: it is that deduced from the tracks of ships.

VII. *Of the first MERIDIANS of PLACES, from which Longitude begins to be reckoned.*

The first meridian of the English charts, has been fixed at London, for the use of the English navigator; and at Greenwich, to be compared with the observations made there and at different places on land and at sea. Also at the Observatory at Paris, by the French. Those who would have a meridian elsewhere, may, by adding or subtracting accordingly.

The unanimous approbation of geographers, as to the determination of the longitude of Goa, * makes it the standard in the construction of the chart of that coast. That city lies $71^{\circ} 25'$ E. from the Observatory at Paris. Agreeably thereto, the other places on the coast of Indostan are fixed according to their bearings and distances. The longitude of Surat, and Cochien, which result from this method, agree with the determination of Mess. de Lisle and Harris. Peter Goos, in his Chart of the Eastern seas, places Goa in $96^{\circ} 55'$ E. longitude from Teneriff, which answers to $78^{\circ} 55'$ from Paris, being $7^{\circ} 30'$ more Easterly than it really is. This error, although considerable, is not so much

to

* The latitudes and longitudes are continued the same here as in the last edition of this work, corrected by Mr. S. Dunn; but from the accuracy in which nautical instruments are since that time made and divided, and the improvements made in Chronometers, the latitudes and longitudes of various places have been ascertained with greater precision; on which account we have, at the end of this book, inserted a general table, alphabetically arranged, of such places as may be depended upon to be the most correct, being taken from the last publication of Mr. George Robertson, Alexander Dalrymple, Esq. and the Requisite Tables.

to be wondered at, when you reflect on the distance between the places, and the method made use of for the determination. The other parts of that chart are not more correct: the short distances and bearings of coasts the most frequented, although easily known, are yet incorrect: For example, that author makes the meridian distance between Goa and Cochien only $1^{\circ} 30'$ instead of $2^{\circ} 20'$, which the bearings of the coast and the difference of latitude naturally produce: hence most navigators reckon themselves almost a-shore, by that chart, when they are not really in sight of land. The astronomical observations made at the Cape of Good Hope in 1685, by the Missionaries who determined the difference of meridians between it and Paris, $17^{\circ} 41' 15''$, is not sufficiently certain to be depended on. Dr. Halley, far from believing it exact, thought it should be but $55'$ of time at most; so that, agreeable to the opinion of this judicious astronomer, the Cape should have been $3^{\circ} 56' 15''$ more Westerly than by the observation. But since, according to several astronomical observations, in 1718, he thought proper to fix its longitude $1h. = 15^{\circ}$ E. of London, which will be $50' 20'' = 12^{\circ} 35'$ or thereabouts, East of the meridian of Paris; and the difference is considerable enough to require new observations. Although reasonably prejudiced against the exactness of the ships tracks, yet, as several who have sailed from the Cape to St. Helena very nearly agreed with one another, it was not unscientific to admit a medium. In fact, we find by these, the difference of longitude between these two places from $23^{\circ} 15'$ to $23^{\circ} 45'$. Now the above Dr. Halley having by several observations compared together, determined the situation of St. Helena $8^{\circ} 30'$ W. of Paris; if from $23^{\circ} 30'$ the middle difference, you subtract this last, because it lies West, there remains 15° for the longitude of the Cape of Good Hope, East of the Observatory; which makes $17^{\circ} 25'$ from London, allowing the difference of meridians $9' 40'' = 2^{\circ} 25'$ as above. But since that time, the Abbé de la Caille, who resided at the Cape, from May, 1751, to Jan. 1753, in order to make correct astronomical observations, by command of the French king, has concluded the longitude thereof to be $16^{\circ} 10'$ E. from Paris; so that, according to the same author, who observed the difference of longitude between Greenwich and Paris, to be only $2^{\circ} 10'$, the true longitude of the Cape of Good Hope will be $18^{\circ} 25'$ E. from London.

VIII. *Of the BEARINGS of PLACES in the EAST-INDIES.*

In like manner, just to hint at the errors of the common English charts, as to the longitude of the same places; they must be wrong, seeing they are plain, determining the meridian by the bearings; but the little use of them is manifest. In these last, the bearing of the coast from Cochien to the entrance of Goa, is NNW. so that there are $2^{\circ} 20'$ difference of longitude, and $5^{\circ} 33'$ difference of latitude: whereas in the English Pilot it is N 18° W. which gives $37'$ less meridian distance between them, making thereby Cochien $37'$ more to the Westward than it really is.

It is not only in the bearings of places that they have erred; the latitude, on which the navigator most depends, is also erroneous. Goa is placed in $15^{\circ} 13'$, whereas the astronomical observations make it in $15^{\circ} 31'$ N. The latitude of Surat, instead of $20^{\circ} 56'$, ought to be in $21^{\circ} 10'$ N. and its longitude 22 more Easterly, with respect to Goa.

All the ancient charts represent the Laccadives and Maldives as a confused heap of islands, very different both in number and shape from what they really are. Since numbers of ships pass through the channels of the former, they are better known, and an exact draught has been made of them.

By the latitude and distance of the islands, which bound the passage of Mamale to the Northward, they are nearly correct; except that of Malique, the situation of which is still uncertain. The opinions of some mariners have placed it as in these charts; but a navigator whose authority may be relied on, has assured, that after he had run over that parallel of latitude, he did not see any appearance of it; whence it may be more to the southward, and consequently nearer the Island Kelay.

The voyages made every year to the Maldives, by several ships, English, French, and Moors, to trade for cowries, (a shell which passeth for money) afford sufficient materials for making a particular chart of these innumerable islands, the Eastern part whereof being most frequented, they are the better known.

The situation of Pondicherry in $11^{\circ} 56'$ N. and $77^{\circ} 32'$ E. of the Observatory at Paris, is the result of several astronomical observations, which have been made by F. Rigand, Tachard, and friar Morisset, Jesuits. This town, thus adjusted, serves to determine the other places on the East coast of Indostan, as far as the mouth of the Ganges, as also a part of the Island Zeloan.

It were to be wished there were some astronomical observations on the coasts of Arabia and Persia, to adjust their exact situation. For want of these, there

has been a necessity to have recourse to the working of ships tracks: but to supply the defect of this method, the shortest voyages have been used, as they are less liable to errors; likewise, those journals whose observed latitudes, and latitudes by account, agreed best with each other; also, those made at the beginning and toward the end of the monsoon.

Out of a great number of journals, (having made choice of those which were found most correct, and reducing their tracks as above-mentioned, the following distances have been found.

From Cochien to Cape Guardafoy the course is $W\ 4^{\circ}\ 30'\ N.$ 466 leagues, which gives $23^{\circ}\ 40'$ difference of longitude. Now the longitude of the former being $73^{\circ}\ 40'$, that of Cape Guardafoy must therefore be about 50° . By another operation the East-most point of the Island Soccatra bore from Cochien $W\ 16^{\circ}\ N.$ 408 $\frac{1}{2}$ leagues, which makes the difference of longitude $20^{\circ}\ 40'$, by which that point must lie in 53° . And as the difference between that point and Cape Guardafoy is 3° there remains 50° for the longitude of the latter; as in the present charts.

From Bombay to Cape Guardafoy, two ships made their course $S\ 68^{\circ}\ 30'\ W.$ and $S\ 69^{\circ}\ 30'\ W.$ the medium being $S\ 69^{\circ}\ W.$ cuts the parallel of $11^{\circ}\ 45'$, which is the latitude of the Cape, in 50° of longitude as before. In like manner Cape Aden bears from Cochien $W\ 4^{\circ}\ N.$ 584 $\frac{1}{2}$ leagues. From Mount Dilla, on the Malabar coast, in latitude $12^{\circ}\ 3'\ N.$ and $72^{\circ}\ 39'$ longitude, to the above-mentioned cape, it is $W\ 1^{\circ}\ N.$ 558 $\frac{1}{2}$ leagues. From Cape St. John to the Burnt Island or Garbora, $S\ 68^{\circ}\ 30'\ W.$ 482 leagues. By the two former, Cape Aden lies in longitude $43^{\circ}\ 58'$, or $6^{\circ}\ 2'\ W.$ from Cape Guardafoy; and by the latter, $46^{\circ}\ 8'$ is the longitude of Burnt Island.

In this place it may not be improper to take notice of two errors in the ancient charts of this part of the entrance of the Red-sea. The first of these is in the distance between Cape Guardafoy and Cape Aden; Peter Goos and the English Pilot making it from 85 to 86 leagues, whereas it is 120. The other, is in the latitude of the Arabian coast, near Maculla; the situation whereof is $47'$ more Southerly than those authors have placed it.

Peter Goos makes the difference of longitude between Goa and Cape Guardafoy $22^{\circ}\ 37'$, instead of $21^{\circ}\ 25'$. If you consult the tables of latitude and longitude at the end of the English Pilot, you will find the difference between Goa and Cape Guardafoy is $12^{\circ}\ 40'$. This must be a mistake, as there the longitude of Goa is $79^{\circ}\ 50'$, and that of Cape Guardafoy $58^{\circ}\ 10'$ Eastward from the Lizard; so that the difference between them is $21^{\circ}\ 40'$. The error appears to have risen from counterchanging the figures of the degrees.

degrees. By this, Cape Guardafoy will lie in $40^{\circ} 45'$ East Longitude from the Observatory at Paris. Edward Wright places this cape in $52^{\circ} 25'$ from the meridian of London, which agrees exactly with the best charts.

After giving Cape Aden a proper situation from Cape Guardafoy, the different parts of the Arabian coast are placed according to their respective bearings and distances; and so by continuing that method, Cape Rozalgat is found in longitude $37^{\circ} 30'$ E. of Paris, which confirms the reckonings of the ships from Goa, Bombay and Cape St. John, to this cape.

The chart of the Gulph of Persia, in this collection, is looked upon by the most experienced navigators to be the most correct and exact of any yet published.

That part of the general chart, which contains the coast of Persia, from Cape Jasques to the Gulf of Guzurat, inclusive, is from the English charts, their trade from the river Sinde making them better acquainted with these parts than any other nation.

The construction of the other general chart is founded upon better principles, because, in fixing the chief places, astronomical observations made at Pondicherry, Malacca, Siam, Pulo Condore, and Canton, have been applied for regulating the situation of places near them.

Having regulated the coast of Coromandel, Golconda, &c. agreeable to the longitude of Pondicherry, the East coast of the Gulf of Bengal becomes regulated also.

The coast of Malayo, Queda, Tenasserim, and Pegu, are drawn from several correct plans of those parts. There is nothing now remains, with regard to the Gulf of Bengal, but the determination of the NW. part of the Island Sumatra, on which depend those of the Nicobars, and other adjacent islands. This is of so much the more importance, as these places are generally made by ships passing and repassing the Straits of Malacca.

It is by the calculation of a series of triangles made by the bearings and differences of latitude of several remarkable objects, lying between Malacca and Acheen, that the longitude of the latter is $95^{\circ} 34'$ E. from London, and its latitude, according to the observations made there, $5^{\circ} 24'$ N. The correctness of this position may be depended on, if it be considered that the several objects above mentioned are so situated as to be seen at the same time, or to have them bearing in one.

Though the several bearings may be hereby pretty exactly determined, especially with a Knight's compass, yet for want of the true distances, in a series of triangles, the error in both latitude and longitude will be considerable,

in proportion to their number; as is evidently the case here, with regard to the latitude of the islands encompassing Acheen.

The error of Peter Goos, in his position of Goa, must necessarily extend to all parts of India, supposing their respective distances were exact. We will now examine the different situation of some particulars.

The longitude, 28° E. of Pondicherry, is 78° E. from Paris, and that part of the coast, he makes $102^{\circ} 10'$ E. from Teneriff, equal to $84^{\circ} 10'$ from Paris, differing only $6^{\circ} 10'$ instead of $7^{\circ} 30'$, from Goa, whereby the difference of the meridians of these two cities, whereon the breadth of Indostan depends, is $1^{\circ} 20'$ less than it should be. Malacca is placed in the same chart in longitude $122^{\circ} 30'$ from Teneriff: the difference is $4^{\circ} 45'$ instead of $6^{\circ} 10'$, which it would have been, if the difference of meridians between Pondicherry and Malacca had been conformable to the difference by the observations. Therefore P. Goos has made the meridian distance between these two places $31\frac{1}{2}$ leagues, or $1^{\circ} 35'$ less than it should be. This error affects particularly the breadth of the Gulf of Bengal, between Acheen and Pondicherry, which the same author has made $13^{\circ} 53'$ instead of $15^{\circ} 14'$, as it is made by working the bearings and distances of Acheen from Malacca. The plain chart in the English Pilot is still less exact.

The Dutch having settlements on the West coast of Sumatra, have caused to be made new charts thereof; from them these are constructed. But here is an entire new one for Java Island from the Dutch, rectifying the latitude and bearings of several places on the South coast, according to the observations of several able navigators; only the exact longitude of some place is necessary, whereby to regulate that of others respectively. An observation at Batavia has been applied, and of great service. This remote city is the most considerable of the European settlements in that part of the Southern hemisphere. Its longitude has of late been exactly found: that of $98^{\circ} 30'$, inserted in the Ephemerides of M. Desplaces, cannot be right, nor is it adopted by any modern geographer. To confirm its situation then, it will be necessary to have recourse to experiments made use of for the position of Acheen, making Malacca the standard.

In order to render this position the more exact, it is necessary to have recourse to the former method, for determining the longitude of Acheen. These gave the true situation of the intervening places, the errors thereof in former charts, and the means of correcting them. For this purpose, the several charts of the Eastern part of the Straits of Malacca have been compared with the memoirs, instructions, and journals relating thereto.

The

The instructions in the English Pilot seem tolerably good in some places; but their incorrectness upon the whole will soon be discovered, on examining whether the places situated between them (Malacca and Batavia) are placed according to their true bearings and distance, and whether the account contained therein be natural. That chart is yet more erroneous in respect to the islands lying to the Northward of the Straits of Banca: most of the journals of voyages to China take notice thereof, and experience hath made it clear; so that such a chart is not at all preferable to a number of other manuscripts, which raise one's indignation, on account of the carelessness and ignorance of copyists.

Batavia serves to fix the longitude of all the islands Eastward of Java, as far as New-Holland: the Islands of Borneo, Celebes, and the Moluccas, are also adjusted by it. With regard to their position otherways, the Dutch charts have been consulted.

The situation of Juthia, capital of the kingdom of Siam, in latitude $14^{\circ} 18' N.$ and $98^{\circ} 30' E.$ longitude from Paris, having been regulated by so many corresponding observations, there remains no doubt of its exactness. By it the Gulph of Siam, and the Islands Timoan and Condore, at the extremes of the mouth thereof, are adjusted. The first is placed, according to its latitude and bearings with Point Romanio, at the East end of the Straits of Malacca; the second, by the astronomical observations of P. Gaubil, in latitude $8^{\circ} 40' N.$ and longitude $105^{\circ} E.$ from Paris.

The places thus fixed, the Western coast of the Gulph is adjusted by Pulo Timoan and Juthia; as the Eastern is by Juthia and Pulo Condore.

The Gulph of Tonquin is so little frequented by Europeans, that but little could be met with better on the subject than the ancient charts, and some remarks made whilst that navigation subsisted.

As to the Island Hai-nan, and the coast of China, to the Macao Islands, included, M. D'Anville, according to the description of the Jesuits, have been followed, being of opinion that these fathers, who were employed by the Emperor of China to make maps of the different provinces, must be supposed thereby to have had a better opportunity of describing the coast than navigators.

The situation of Canton is as well confirmed as that of Juthia, by astronomical observations; so that Macao and the adjacent islands are well regulated thereby.

Peter Goos placing Siam or Juthia in longitude $104^{\circ} 50'$, differs $6^{\circ} 20'$ from the observations, which is $1^{\circ} 35'$ more than the difference of Malacca.

It is less with regard to Pulo Condore, the same author making its longitude but $4^{\circ} 55'$ more than it is. In placing Canton in $134^{\circ} 43'$, or $116^{\circ} 4'$, from Paris, it differs just 6° from its true position. Hence it follows, from the two last comparisons, that the Dutch charts have placed Canton $1^{\circ} 2'$ further to the Eastward of Pulo Condore than it really is. It is to this, and not to the currents, that navigators ought to attribute the difference they have experienced in their departure from Pulo Condore to Macao; for, although most make use of manuscript charts, (very necessary for navigating in these seas) they mostly have this error; and although there have been the helps of astronomical observations for some time, yet the authors of them had rather copy the defect than correct it.

The English Pilot puts Canton $7^{\circ} 30'$ East of Pulo Condore; this is $1^{\circ} 37'$ too much. This is sufficient to prove the new charts better adapted to the use of navigation. The coast of China, from Macao to Amoy, including Formosa, is taken from a manuscript chart, agreeing with the courses and remarks of those who have frequented this coast.

The Phillippine Islands are more particular than any of the former ones, being drawn from a survey of these Islands, made by the command of the viceroy of Manilla, and engraved here in the year 1734. As to the situation of that city, in latitude $14^{\circ} 30'$ North, and longitude 118° it agrees with that inserted in the *Connoissance des Temps*. The reciprocal situation of the SW. point of the Island Paragoa, and that of the North point of Borneo, cannot be right in the other charts, unless you allow the former a greater length and different bearings; but there must be new surveys made before that can be corrected. Most navigators persuade themselves that the charts on a large scale are preferable to others, especially for coasting; and make no scruple to enlarge the very small ones; because places would be confused or imperceptible, if they were omitted in the small ones. By such omissions ships are exposed to dangers, so much the more to be feared as they are unknown. In other words thus: dangers being omitted in charts on a large scale, causeth the navigator to conclude there are none, and thereby puts him off his guard. These sorts of charts are so multiplied, that it requires a particular study to distinguish the copies from the originals.

IX. *The CONSTRUCTION and CAUSE of the WINDS, as they depend immediately on the Action of the SUN.*

Since the heat of the sun raiseth and supporteth the air, and the air being intermixed with aqueous exhalations and vapours, and put in motion in almost an horizontal direction, forms the wind blowing, as it is usually termed, in that direction; it follows, that the sun, by continually throwing his rays on the air and circumambient vapours of the earth and sea, must have some power for forming the winds, and giving them particular directions at different times and places.

There have been different suppositions made by philosophers concerning the exact manner how the minuter particulars of the air and atmosphere are effected in the production of these phenomena, and some disputes have arisen concerning them; but the best reasoners on this subject, amongst whom is M. Leibnetz, a famous foreigner, have given their opinions nearly as follows.

Since air is an elastic fluid, and its particles do freely intermix with watry particles and vapours, and these are copiously contained in the lower parts of the region of the air, near the surface of the earth and sea; and farther, since it is the natural consequence of air and vapours to expand by heat; it therefore follows, that the particles of the atmosphere, from the highest to the lowest part thereof, do endeavour to expand and enlarge themselves, by the elastic power contained in them, when they are exposed to the presence and heat of the sun.

It is farther observable, that in such a congeries of globular vapours, each of them may have its internal or central part replete with matter specifically lighter than the external crust or shell; on which account the globular vapour may be specifically lighter than a globular vapour of the same dimensions that is formed of true permanent air itself; and therefore it may become fit for the formation of wind; or, what amounts to the same thing, it may be easily obstructed or put in motion horizontally by any small external power acting upon it.

X. *Of the apparent DIURNAL MOTION of the SUN.*

It is manifest from observations, that the sun appears first in the morning of every day toward the east, and disappears in the evening toward the west,

west, as viewed from all places on land or at sea. This is called the apparent motion of the sun from east to west, performing one whole revolution of 360 degrees, to appearance, in the space of 24 hours. Near the 20th of March, and 20th of September, this motion is nearly in the arch of the great circle which is equidistant from the earth's northern and southern poles; and therefore the sun is then said to move in the equator, or over the earth's equinoctial line.

But the laws of the solar system being such, that near the 20th of June, the sun is apparently 23 degrees and a half north of the equator, and near the 20th of December 23 degrees and a half south of the equator, a vicissitude or change of the seasons, from spring to summer, autumn, and winter, is afforded for both the northern and southern inhabitants of the earth.

These two apparent motions, the diurnal from east to west, and the annual from north to south, and from south to north, have no inconsiderable share in producing that variety in some cases, and constancy in others, which are observed in the winds of the Torrid Zone.

XI. *Of the PERPETUAL TRADE-WINDS, that blow from EAST to WEST, in the TORRID ZONE.*

In the Torrid Zone, where the sun's apparent motion over the inhabitants is almost in a vertical manner, rising nearly east, and setting nearly west, and his rays at noon fall nearly perpendicularly in a compact manner, and the sun-burnt earth neither overloads them with moisture, nor any inequality of the sea makes resistance to their operation, the wind must be constant and universal, tending diurnally to the west, and annually towards the north and south; and its motion must be pursuant thereto, as long as the obviating coasts and shores will permit the air to move the same way, without any deflection, or impediment of some other kind.

Dr. Halley demonstrates, that it necessarily depends on the diurnal course of the sun: that the air, which is less rarefied by his heat, and more ponderous, must have motion towards those parts which are more rarefied and less ponderous, to bring it to an equilibrium.

Again, the presence of the sun continually shifting to the westward, that part to which the air tends, by reason of the rarefaction made by his greatest meridian heat, is carried westward, and consequently the tendency of the whole body of the lower air is that way.

Hence

Hence is formed a general wind, blowing westwardly, which being impressed upon all the air of a vast ocean, the parts impel one the other, and so keep moving till the next return of the sun, whereby so much of the motion as was lost, is again restored; and thus the wind is made perpetual.

XII. *Why the Winds blow North-westwardly or South-westwardly; also, the CAUSE of CALMS at particular Places in the OCEANS.*

From the same principles, Dr. Halley tells us, it follows, that this wind should, on the north side of the equator, blow from the northward of the east, and, in south latitude, from the southward thereof, while the sun is upon or near the line; the air being there more rarefied, and his motion swifter, than at any distance from it. These motions, by his account, being superadded to the former wind, answer all the phenomena of the general trade-winds.

Such is the tendency of the general trade-winds, near the line, while the sun is near the equator, as Dr. Halley has clearly demonstrated. Hence it is, that when the sun is near his greatest declination north, the winds to the northward of the line afford stronger and fresher gales, by the sun's presence there, and his quick apparent diurnal motion to the westward; the air being there more rarefied, and his motion swifter than at greater distances north and south of the equinoctial. But wherever the sun is vertical, it generally produces squalls and rain, more or less, according to the situation of the place.

Again, when the sun is in the northern hemisphere, the winds to the southward of the line are drawn even across the line into north latitude. This effect has the sun over the winds between the Coast of Guinea and the West-India Islands.

When the sun is in the southern hemisphere, and near the southern tropic, then are the winds to the southward of the equator stronger by the sun's presence there; and the winds to the northward of the line are drawn even across the line, into south latitude. This effect has the sun over the winds between the Coast of Brasil and the Coast of Angola. Hence it is that twelve degrees, viz. six on each side of the line, are commonly assigned for the space of tranquillity or calms, occasionally produced by the sun's declination, sometimes to the northward and at others to the southward of the line; and the calms upon the line are most likely to happen when the sun is upon the line, or within a few degrees on either side of it.

E

Although

Although geographers commonly allow twelve degrees for tranquillity, the sun's tropical declination being extended more than twenty-three degrees, this more than doubly sufficeth to draw the said vacuity from one side of the line to the other, with an half-yearly vicissitude, as is manifest from observations.

XIII. *Of WINDS from 30 to 50 Degrees of NORTH or SOUTH LATITUDE.*

The wind, by adhering to the sun's diurnal course, upon its advance to twenty-eight or thirty degrees of either latitude, blows to the westward perpetually, especially at sea, where no land impediments fall in its way, either to obstruct or divert it.

Yet, from twenty-eight to thirty degrees of either latitude, there being a space of two degrees tranquillity intermediating between the said north and south-easterly winds, it must need stagnate into a calm of so considerable a breadth; and this may justly be termed the Shifting Line of the Winds from east to west. This vacuity of two degrees may be said to hinder the said opposite fluxes of air from approaching each other: hence it is, that the same wind was first carried westerly by the diurnal course of the sun, and secondly declined, by his annual motion, more north and south, thirdly, is often deflected more obliquely by the inclinations of the shores, and fourthly, is returned back again, periodically or perpetually, from near the opposite points by the sea's situation, which is finally (by the concurrence of its flux underneath) carried perpetually quite contrary to the diurnal course of the sun.

XIV. *Of the Line in which the WINDS shift themselves without the TORRID ZONE.*

From thirty to fifty degrees of either latitude, there is a periodical or perpetual westerly wind blowing from the south-west to north-west, according to the different seasons of the year, it being always influenced by the sun.

In the northern hemisphere, when the sun's presence is there, the winds are generally from west to south-west; but, when the sun is absent from that hemisphere, the winds are generally from west to north-west, accompanied with frequent storms, the influence of the sun drawing the winds from the northern to the southern hemisphere. Such are the winds in the Western Ocean between North America and Europe.

In

In the southern hemisphere, when the sun's presence is there, the winds are generally from west to north-west; but when the sun is absent from that hemisphere, the winds are generally from west to south west, accompanied with storms and bad weather; the influence of the sun drawing the wind from the southern to the northern hemisphere. Such are the winds in the Ethiopic Ocean, between the Coast of Brasil and Cape of Good Hope, to the Coast of New Holland.

In the aforesaid space, from thirty to fifty degrees of either latitude, the westerly winds are either periodical or perpetual, according to the sea's situation.

XV. *A general Account of the TRADE-WINDS, and their shifting, by*
Dr. HALLEY.

“ In the Indian Ocean the winds are partly general, as in the Ethiopic Ocean partly periodical; that is, half the year they blow one way, and the other half near upon the opposite points; and these points and times of shifting are different in different parts of the ocean: the limits of each track of sea, subject to the same change or motion, are certainly very hard to determine; but the diligence (says he) I have used to be rightly informed, and the care I have taken therein, have in a great measure surmounted that difficulty; and I am persuaded that the following particulars may be relied on.

“ 1st, That between the latitudes of ten degrees and thirty south, between Madagascar and New Holland, the general trade-wind, about south-east by east, or east south-east, is found to blow all the year long, to all intents and purposes, after the same manner as in the same latitudes in the Ethiopic Sea.

“ 2dly, That the aforesaid south-east winds extend to within two degrees of the equator, during the months of May, June, July, &c. to November; at which time, between the south latitudes of three and ten degrees, being near the meridian of the north end of Madagascar, and between two and twelve, south latitude, being near Sumatra and Java, the contrary winds from the north-west, or between the north and west, set in and blow strong, accompanied with dark rainy weather, for half a year, viz. from the beginning of November to April; and this monsoon is observed as far as the Molucca Isles.

“ 3dly, That to the northward of two degrees, south latitude, over the whole Arabian or Indian Sea, and the Gulf of Bengal, from Sumatra to the Coast of Africa, there is another monsoon, blowing from October to April, upon

upon the north-east points; but, in the other half year, from April to October, upon the opposite points of the south-west and west south-west, and that with rather more force than the other, accompanied with dark rainy weather; whereas the north-east blows clear. It is likewise to be noted, that the winds are not so constant, either in strength or point, in the Gulf of Bengal, as they are in the Indian Sea, where a certain and steady gale scarce ever fails: it is also remarkable, that the south-west winds in those seas are generally more southerly on the African side, and more westerly on the Indian.

“ 4thly, That, as an appendix to the last-described monsoon, there is a track of sea to the southward of the equator, subject to the same changes of the winds, viz. near the African Coast, between it and the Island of Madagascar, or St. Laurence, and from thence northward as far as the line; wherein, from April to October, there is found a constant fresh south, and south south-west wind, which, as you go more northerly, becomes still more and more westerly, so as to fall in with the west south-west winds mentioned before, in those months of the year, to be certain, to the northward of the equator.” Thus far Dr. HALLEY.

In the other months of the year, that is, from November to April, in the beforementioned track of sea, to the southward of the equator, and between Madagascar and the Continent, there are found two very different and opposite winds, viz. from the equator to the north end of Madagascar, the north-east monsoon blows fresh and steady gales; between Madagascar and Mosambique, and as far to the southward as St. Augustine's Bay, or the southern tropic, the winds are from north-west to north and north-east, with frequent storms and dark rainy weather.

These winds reach as far as the southern tropic, where they are met by the southerly or south-east winds, which blow at the south end of Madagascar at all times of the year: and they blow very strong at this season of the year. These southerly or south-east winds, forcing themselves to the northward between Madagascar and the Continent, and meeting the strong north-east, north, or north-west winds, repel each other with great fury: this occasions terrible storms and tempests.

The south-east or southerly winds generally carry it against the northerly winds, especially to the southward of the southern tropic, where the south-east, south, or south-west winds blow all the year.

From October to April, the south and south-east winds mostly prevail from the south end of Madagascar, all along the coast of Africa, quite to the
Cape

Cape of Good Hope, where the south-east winds blow very strong, and are constant at this season of the year. From the said Cape to St. Helena the south-east winds blow a fresh and steady gale, and thence to the equator:

XVI. *Of the SHIFTING TRADE-WINDS, and their Dependence on the Sun's Declination, and how they are in the ARABIAN SEA.*

So strictly does the mutual concurrence of the north and south-easterly trade-winds observe the equator, while the sun's diurnal motion is near the line; but, when his annual declination withdraws his vertical rays, and the air grows cooler in his absence, the direction of the said winds, following close to his greatest meridional heat, must also decline with him into the same latitude, whether it be to the north or south; and those winds must make their half-yearly returns of summer and winter alternately on each side of the equator.

Besides, the said space of rarefied air, still attending the sun's declination successively towards each of the tropics, and still intermediating between the said north and south-easterly winds, must needs stagnate into a calm of so considerable a breadth, on each side of that shifting line described by the sun's declination, as to hinder the said opposite flux of air from approaching each other at their congress, this geographers commonly assign for a track of ten degrees of tranquillity. The sun's tropical declination being extended to twenty-three degrees and $\frac{1}{2}$, it more than doubly sufficeth to draw the said vacuity from one side of the line to the other, with an half-yearly vicissitude.

The Arabian Gulf, or that part of the Indian Sea which the said shifting north and south-easterly winds chiefly effect, being near the equinoctial, it concurs very opportunely with the motion of the sun, either to remove them all alternately out of that compass, as not exceeding ten degrees on the south of the equator, and twelve degrees to the northward of that line; or, at least, to abate their force in such measure, that they cannot resist the south and north-westerly monsoons, which of course succeed them from the opposite points every half-year, at their respective seasons, in order to supply the vacuities left behind them.

Hence it comes to pass, that the north and south-east trade-winds never blow both at once within the compass of the gulf or sea aforesaid; the one being no sooner drawn off by the sun's declination, than the other is brought on again by its own weight, to fill up the vacuity left on the other side of the equator. So it happens in April, when the sun, having passed the line into the
the

the northern signs, at once carries off the north-east trade-wind or monsoon from it, and draws thither the south-east wind after it; which, from the situation of the aforesaid sea or gulf, turns it to the south and south-west, and, having repassed it again to the southward, brings those winds back again, and so carries them backward and forward; the one towards the line, and the other forwards it, by an half year vicissitude.

It is farther observable, that those easterly trade-winds, and westerly monsoons, which happen at the same time, blow jointly either towards the north or south; so from April to October, they both blow to the northward, pursuant to the sun's declination. On the contrary, they jointly, from October to April, attend his presence in the south. Therefore the westerly monsoons, inasmuch as they blow north and south, are as effectually influenced by the annual course of the sun, as the easterly trade-winds are to blow hither or thither at the same season.

Hence it comes again to pass, that the said south-easterly winds, as Dr. Halley observes, extend from the aforesaid ten degrees south latitude, near the equator, during the months of May, June, &c. to October, while the sun remains to the northward of the line, to draw them thitherwards. On the contrary, that there is blowing a north-east wind for the other half-year, from November to April, the sun being on that side of the line to attract it. Now why, or how, those two easterly trade-winds, so intermixing, should each be supplied for its respective half-year by a westerly monsoon from the opposite point, and to assign a cause able to produce so constant an effect, leaves a phenomena of the shifting trade-winds unaccounted for.

XVII. *How the SOUTH and NORTH-WESTERN MONSOONS are respectively regulated in the ARABIAN SEA.*

Having shewn in the former, that the south-easterly wind, which blows perpetually from thirty to ten degrees of the same latitude, is drawn eight degrees nearer the line, on the east side of the Arabian Bay, from April to October, by the sun's declination northward; and that the south-west monsoon, by virtue of his said declination, blows to the northward at the same time; let us see how it acquires a westerly turn, by the said bay's situation on that side. Here it is observable,

First, that the African shores, which coast the ocean towards the west, tend east-northerly from the Cape of Good Hope to Cape Corientes; and from

from thence it tends north-easterly from Cape Corientes all along the equator, and beyond it to the bottom of the said bay, the land being high for the most part; and the sea-winds being a heavy meteor, must consequently, as strictly observe their direction, as rivers do the banks which bound them.

The winds must follow as far as they reach, especially at that season; because a ponderous load of winterly air, and foul weather, drives them thitherward with more vehemency (as Dr. Halley takes notice) than any other winds that trade in those seas. Moreover, it is evident from experience, that in the winter season, whether stormy or otherwise, the winds generally follow the direction of the coast or shores. From the Cape of Good Hope to Cape Corientes it is mostly from west to south-west; and from Cape Corientes to the equator, it is mostly south south-west, as the coast or shore lies.

Besides, the said south ocean (whose superficies sustains that south-west wind all the while) sending its tide directly northward to the said bay, and its being contracted on that side by the inclining shore, the flux of its coasting current must be proportionably hastened, and consequently communicate to the superincumbent south-westerly monsoon a more fixed and steady determination: this drives its flux as deep into the bay as it went before.

In consequence whereof it is observed, that a constant current of the sea, for all that track from Madagascar to the equator, entering the south-west corner of the Indian Ocean, (where the monsoons first begin to shift) carries the superincumbent air along with it down into the Arabian Gulf; and, as Dr. Halley affirms, a constant fresh south-westerly wind, blowing along that coast on both sides the line, which, the further you go northerly, still blowing more westerly, falls in (says he) with the south-westerly monsoon, or rather gives it a beginning, by falling in with it in April, and ending with it in October. This plainly demonstrates, that they compose, and become, as it were, the same undiscontinued flood of water and wind conjoined, without any distinction, while the sun's north declination encourages the south-west wind to blow, and withdraws that north-easterly wind, which otherwise would oppose it.

This monsoon blows more southerly on the African shore, and more westerly on the Indian; and further to the northward it blows more westerly.

Hence it comes to pass, that the south-west monsoon being derived from the joint current of wind and water aforesaid, and following the south-westerly direction of the African Shore, which contracts and enforces it both by land and sea, having passed the equator, its proper limit is the bottom of the
Arabian

Arabian Bay ; whereas the south-east trade-wind, which blows at the same time on the south side of the line, never reacheth it, for want of the like assistance from any shore, or current to help it forward ; but on the contrary falls short of its natural course at least two or three degrees, being repulsed by the contrary motion of the wind and sea.

To derive the north-west monsoon regularly from the same source, or current of water refluxed, which brought the other monsoon directly from the south-west ; it is to be noted, that the bay wherein they are both propagated is of a triangular figure, the subtense of whose north angle, pointing directly east and west, separates the said bay, on the south, from the wide ocean, with a barrier composed of isles and shallows ; whereon the said south-westerly current falling obliquely, and entering into the gulf at its south-west angle, it is reflected from near the corner thereof, toward the other end of the said barrier, where the stream refunds it again, by an easterly outward-bound passage, into the ocean whence it came ; drawing the incumbent north-west monsoon after it from October to April, its proper season.

Conformable to the scheme of the south-westerly flux, and north-westerly reflux, of the said current, Dr. Halley assures us, that a fresh westerly wind attends it down the bay, in which, the further you go northerly it still blows more westerly, till they both approach near the eastern shore, where the current (being now on its return towards the ocean) veers about to the northward, and thence westerly, till it falls in with the opposite eastern coast, following its direction as far as the Maldivia Islands, which tending lineally to the same point, it steers on its course forward ten degrees further, till it reaches the equator.

Whilst the said current, descending into the bay, goes on dispersing its stream into almost calm water, the opposite eastern shore re-collects it again, and revives its motion by the like degrees, till it has passed the said Islands up to the line, where it falls in exactly with the north-west monsoons ; and thereby stirs up a motion in the incumbent air of that tendency, the opposite south-east trade-wind being already withdrawn by the sun's declination.

Therefore it must carry that monsoon, so raised, along with it, and in the same direction ten degrees further, to its proper limit, till it meets with the said wind to stop it ; and then the stream underneath, having passed over the aforesaid barrier of isles and shoals, is refunded into the ocean whence it came.

Thus both of the westerly monsoons are equally beholden to the same current ; that, from the southward, as being carried down the Arabian Bay towards

towards the north-east, by its direct course; and this, from the northward, as returned back again by its reflux into the south-east, in compliance with the streams underneath; yet with this difference, that, because the water meets no opposite stream to dispute its passage, it is perpetual.

On the contrary, the concomitant fluxes of the westerly monsoons upon the opposing trade-winds, alternately desist, and become periodical; those easterly winds within their compass overpowering all opposition, so as either to restrain the contrary monsoons, or set them at liberty, while the sun's south or north declination, by half-yearly returns, alternately sets on the easterly winds, or takes them off again.

Hence it is, that the south-west monsoon begins to blow in April, when the sun's entrance in the north signs withdraws the opposite north-east trade-wind, which discontinues till October.

But when the sun, by repassing the line into the south latitude, brings it on again, the north-west monsoon blows, and continues the other half-year, from October to April; from the equator to ten degrees south latitude, and then desists, with regard to the south-east trade-wind, which raiseth to countermand it.

Thus land breezes, which follow the streams of fresh rivers, are naturally perpetual; nevertheless they are driven back periodically, by the salt floods, till their ebbs gives them leave to return again, and blow seaward as they did before.

Again; from October to April, notwithstanding the north-east trade-wind has driven back the opposite south-west monsoon from its adhesion to the direct course of the south-west current which produceth it, its stream being refluxed, and retaining in former force, must gradually decline the motion of the incumbent air from the eastward to the westward of the north, till it has repassed the line to the southward, and effectually raised the north-westerly monsoon. Otherwise there might be produced a calm.

Hence it is that those north and south-easterly winds, which follow the diurnal course of the sun, never blow on both sides of the equator at once; and that that current of the sea, to which are ascribed the contrary south and north-westerly monsoons, serves only, when and where those easterly winds intermit, to determine the motion of the air that way, and to supply their respective vacuities till their return.

Farther, that those two shifting winds, which blow at once, tend jointly either to north or south, and still towards the sun; that the inequality of their summer's levity, and winter's gravity, may give force and celerity to the

motion, so as to be the same north and south winds, but differently directed on each side of the equator; easterly by the sun's diurnal tendency, and westerly by the current aforesaid.

XVIII. *How the SHIFTING WINDS or MONSOONS, are propagated in the BAY of BENGAL and the CHINA SEAS.*

Forasmuch as the Bay of Bengal and Sea of China, are alike affected by the western monsoon, and at the same time; and all three lie collaterally to each other, and lineally to the same ocean which produced the aforesaid current; the tidal tumour thereof (to render the cause co-extensive with its effect) must spread itself comprehensively over them all at once, to produce a general and uniform commotion in the air.

Farther, if that monsoon be not so constant in strength in the Bay of Bengal as it is in the Arabian Bay, it is because the ocean, being contracted all along the African Shore, more immediately affects it, and so must needs give the wind a more fixed and steady determination there, than after it is dilated by a greater expansion.

Beside, the Bay of Bengal being of a triangular figure, as well as the Arabian Bay, and they lying respectively in the same horizontal position, the tidal motion of the sea, which, with the aforesaid current, falls into them both with the same obliquity, must equally effect them directly with a south-westerly monsoon, and reflexedly with a north-easterly one.

But it is farther to be observed, that both of these bays are conjoined and open towards the south, and are alike subtended by the barrier aforesaid; therefore on that side, the north-west monsoon, as being jointly directed by them both, must reach co-extensively along with it, from the eastward of the north end of Madagascar to Sumatra, and from the equator to ten degrees south latitude, as is found by observation.

But as to the Chinese Sea, although it lies on the same side of the line, and according to the same south-west direction, with open mouth towards the Indian Ocean, and partakes of the said south-west monsoon, yet its channel more respecting the north and south points than the bays aforesaid do, its flux of air, as well as of water, must needs deflect the same way. Farther, it being an oblong track of water, and not triangular, beside being a thoroughfare passage out of one sea into another, it can by no means reflect its stream, either of air or water, back towards the south-east in favour of a north-west monsoon.

From

From what hath been said on this subject, it appears plainly, that a place so affected with the monsoons must lie upon or near the equator, to shift them with the sun's declination, both northward and southward, according to the different seasons of the year; therefore all seas of any other position, are incapable of the like alteration.

Besides, the figure of that part of the Indian Ocean which is so affected, must be triangular, with an inlet at its southwest angle, to receive the stream of water which conducts the south-west monsoon into the bay. It must likewise have an outlet at its south-east corner, to set the north-west monsoon off again by the opposite point; as this appears by the special service of every part of the said bay.

Further, it was requisite that a barrier, consisting of isles and shoals, should pass between the south-west and south-east passages, to strengthen the afore-said current into a stream, because it almost stagnates in the middle of the gulf, in order to stir up the incumbent air into a north-west monsoon. Withal, it was to be of a proportionable breadth, to continue its flux over that rampire for six degrees together into the southerly ocean, to meet the south-east trade-wind, which was to stop it before it ceased.

This barrier was to be but of a mean stature; neither so high as to hinder the tide or current from passing over it, that it might be favourable to both the south and north-west monsoons, by letting the one enter the bay as freely at the west end, as the other to go off at the east; nor yet so low, as to admit its flood in so full a manner, as to controul or obstruct their shifting motion.

Moreover, the south-western current of the wind, which coasteth the African Shore, from near the Isle of Madagascar to the equator (to which Dr. Halley allows a periodical flux from April to October, yet terms it only an appendix of the south-west monsoon till it hath passed the line) till it hath passed the equator, it remains out of the sun's power to give it check, and return it whence it came by his southerly declination.

XIX. *Of the WINDS which are contrary to the TRADE-WINDS and MONSOONS; or which are adverse to the general Easterly Winds and are perpetual.*

First, Northward of the line, between four and ten degrees of latitude, and between the meridians of Cape Verde, and the other easternmost islands that bear that name; Dr. Halley tells us, there is a track of sea, wherein it were improper to say there is any trade-wind, or yet variable.—The little

winds there, are only some sudden or uncertain gusts of very little continuance, and a small extent, which he assigns to the track between two contrary winds; one on the north side, blowing easterly from the said Cape toward Guiana in America; and the other on the south, from Brasil toward Guinea in Africa. Probably this might turn the interjacent air into a whirlwind, did not that part of the ocean, where the Atlantic and Ethiopic floods meet, concur to keep it fixed, these being neither to flux nor reflux, that might disturb its quiet.

Secondly, In that track of sea, which on the south lies next adjoining to this, the southerly and south-west winds are perpetual, viz. all along the Coast of Guinea, for above five hundred leagues together, from Sierra Leona to the Isle of St. Thomas. Thus the south-east trade-wind, upon its entrance into the Straits (in compliance with the south-westerly tendency of the sea current along the Brasilian Shore) becomes south, south-east, and by degrees full south; but, in being carried down with the stream toward the Guinea Shore, veers about to south-south-west, and by degrees to south-west and west-south west: at last, the current of water is repulsed by the eastern shore of Guinea, returns toward the south (whence it came) to make restitution; and, being ingulfed by the tides detumescency, is carried off by libration thither, and deflects the superincumbent current of air into the south after all, to complete its circulation.

To these reasons, assigned by Dr. Halley, may be added the following instances of the same truth.

First, All along the western coast of Peru, for above five hundred leagues together, from near the Magellanic Straits as far as the Gulf of Panama, an uninterrupted and almost perpetual flux of air attends the current of water which supports it, blowing from south to north, or within a point or two to the westward, according to the different inclination of the shore. The exhalations, which compose this wind fall down from the Andes out of the east, and the western Pacific Ocean lies wide open to receive them, yet without giving a beginning to an easterly trade-wind, for all that length of shore, till fifty leagues off at sea.

Secondly, A perpetual flux of air or wind adheres to the coasting current of the African Shore on the Ethiopic side, from the Cape of Good Hope to near the most southerly part of Guinea. This constantly blows southerly, by the draught of the stream underneath; the wind keeps that flux of water on foot, by its constant descent from the adjacent shore, and both tend thitherward by the mutual assistance of each other.

Such

Such is the adhesion of the incumbent air to the water, when they are got into motion, and have free liberty to follow the same direction. Otherwise each may be stopped, or both be deflected several ways at once, as the south-west monsoon before mentioned. It may be there observed, that whilst the south-east wind was withdrawn, and the wind was passing along the Coast of Africa down into the Arabian Gulf, jointly with the stream that conducted it, and after the current had stagnated in the middle of the bay; as soon as it revived its motion toward the south-east, it began to pursue its reflected direction: but, when the south-easterly wind put a stop to its career, and the current reflected towards the north-west began to revive and gather strength, the north-west monsoons did so too, and fell in with it, attending it through the south-easterly passage into the wide ocean, where both ceased together.

By this means sea-faring winds disorder those of the east, which are constant by the influence of the sun. In some seas they are promoted too soon, and accelerated, as near Cape Verde. In some other seas they are retarded. In others, they are extended and enlarged far beyond it, as all along the Guinean Coast. In others, thwarting by their transverse course from south to north; as on the western shores of Angola and Peru, for a thousand leagues together. In others, blowing directly from the opposite point; as along the southernmost part of Guinea, from Sierra Leona to the bottom of the bay. All this perpetually.

Yet, in the Indian Ocean, these sea bred gales are so complying as to yield readily to the periodical forces of easterly trade-winds, and respectively to supply all the vacancies left behind them in their absence.

From the same principles it may be inferred, that on the Coast of India, when the calms are more frequent than ordinary, tempests and hurricanes happen, as on the Coast of Coromandel and Sea of China. These constantly arise at the end of the westerly monsoons, and therefore are commonly called the breaking-up of the monsoons; and every where a calm attends them.

Of the Constant Trade-Winds, Monsoons, periodical Trade-Winds, Land and Sea Breezes, and variable Winds that commonly blow in the East-Indies.

XX. *Of the constant SOUTH-EAST TRADE-WIND.*

In the East-Indies, there is only one trade-wind that blows constantly from the SE. quarter, between the latitude of 12° to 28° or 30° S. and from New Holland quite to Madagascar, and the east Coast of Africa. This trade,
from

from the middle of May to the middle of September, extends more northerly, viz. to the latitude of 8° 6° 2° S. and sometimes to the equator, especially in the eastern parts of India. Though this is said to blow constantly, yet it doth not, properly speaking; but sometimes varies quite round: this however is seldom. When it happens near the equinoxes, ships between Mauritius and the Cape have very stormy weather.

XXI. *Of the PERIODICAL TRADE-WINDS, or MONSOONS.*

The periodical trade-winds, or monsoons, are usually said to blow six months from one quarter, and six months from the opposite quarter; of which there are four in India, viz. the SW. and NE. the SE. and NW. monsoons.

The SW. monsoon blows from about the middle of April to the middle of October; and from the latitude of 2° S. as far northward as Japan, except in the Persian Gulf and the Red Sea. The NE monsoon blows through the same track, from the middle of October to the middle of April.

The NW. monsoon and its opposite are confined to a more narrow space, viz. between the latitudes of 2° and 12° S. and from New Holland to the north end of Madagascar. The NW. prevails in this track, all the time the NW. monsoon blows to the northward of the equator; and the SE. monsoon, during the other half of the year; which is all the time that the SW. monsoon blows in north latitude.

XXII. *Of the FAIR and RAINY SEASONS.*

All over the East-Indies, the westerly monsoon, as well NW. as SW. brings the rainy season, with frequent squalls and dirty weather; and the Easterly monsoon brings fair weather, except on the Coast of Coromandel, and the north part of Zeloan, where the rainy season is from October to January.

XXIII. *Of the changing of the MONSOONS.*

The changing of the monsoons is commonly gradual, and some years happens near a month sooner than in others. The change of the NE. and SW. monsoons is often attended with violent storms, which to the eastward of Malacca are called Tuffoons, and to the westward the Breaking-up of the Monsoons. They seem much the same as West-India hurricanes; but never happen at the change of the NW. and SE. monsoons, though in those tracks, at that season, there is often very bad weather.

XXIV. *Of the LAND and SEA BREEZES.*

The land and sea breezes prevail, more or less, near almost all the coasts in India, during the NE. monsoon; they also blow sometimes during SW. monsoon, but not so general.

XXV. *Of the VARIABLE WINDS.*

The variable winds prevail chiefly in the Straits of Malacca, Persian Gulf, and Red Sea: likewise all over the Indian Seas northward of 12° South latitude, near the changing of the monsoons.

XXVI. *Of the SOUTH-WEST MONSOON.*

The SW. monsoon begins to blow, near the Coast of Africa, soon in March; and towards the end of that month, along the shores of Arabia Felix (within the Red Sea) to Cape Rosulgat. Early in April, it prevails along the coasts of Guadel, Seindy, Guzurat; and quite to Surat, by the middle of that month. But, from Bombay, along the Coast of Malabar, as far as Cochin, this monsoon is not well set in till between the latter end of May, and the middle of June, by which time it is general.

From Cochin southward to C. Comorin, the monsoon begins half a month sooner than at Bombay; and at Tuttacareen Bay, and along the south side of Zeloan, about a month sooner than at Bombay, viz. between the end of April and the middle of May.

At Bengal, and along the Coast of Orixa, this monsoon begins early in March; but more to the southward, so far as Due Point, it begins fifteen or twenty days later; and on the Coast of Coromandel, it is between the latter end of April, and the middle of May, before it is well set in; but, along the NE. side of Zeloan, from Crankanella to Point Pedro, it begins earlier by half a month, viz. between the middle and end of April.

Along the eastern shores of the Bay of Bengal, it is between the middle and latter end of May before the SW. monsoon prevails, by which time it is general.

In the Bay of Siam, and along the Coast of Cambodia, Cochin-china, Tonquin, and China, the SW. monsoon begins, as on the Coast of Golconda, between the beginning and end of April: this is along the shores; but at a distance from the land, it is near a month later. For this reason, along the north end of Borneo, Luconia, &c. it does not blow till between the first and last of May.

XXVII. *Of the NORTH-EAST MONSOON.*

As the SW. monsoon continues only six months, and begins soonest near the shores, it therefore ceases there first; and the opposite one (NE.) begins first near the shores, (except close to the Malabar and Guadel Coasts, where it never blows steady) and then spreads like the other, till it becomes general through all those seas, as above mentioned, where the periodical wind blows.

To know therefore when a particular monsoon begins at any given place, it ought only to be considered at what time the opposite monsoon begins, and in what track; and about six months afterwards the other monsoon may be expected.

XXVIII. *Of MONSOONS in the STRAIT of MALACCA.*

The Strait of Malacca has not yet been mentioned, though it lies in the track of the SW. and NE. monsoons, because the influence of those monsoons, that blow only the breadth of Sumatra from it, and of the land and sea winds upon the adjacent shore, is so great, that it may rather be called a track of variable winds; for no monsoon prevails long here.

During those seasons that the SW. or NE. winds blow strongest without the Strait, it commonly blows gentle gales most part of the day, from the same quarter within; that is, from the eastward in December and January, and from the westward in June and July.

XXIX. *Of the SOUTH-EAST and NORTH-WEST MONSOONS.*

The SE. and NW. monsoons differ in nothing from the SW. and NE. monsoons, but in the track and quarters they blow from, as both already mentioned. The SE. winds set in from ten to twenty days sooner to the eastward of the meridian of Bengal, than to the westward of it.

XXX. *Of LAND and SEA BREEZES in MALACCA STRAITS.*

Through all India the NE. and NW. monsoons, when near done, blow faint; and then the land and sea breezes begin near the shores, and continue to blow, more or less, (except on the Malabar coast) until the opposite monsoon commences, and gathers sufficient strength to blow steady: consequently there are land and sea breezes in February and early in March, along the north coast of Africa, the Coast of Arabia Felix, and eastward near Guzurat, which yield to the SW. monsoons that prevail in March and April. The same is to be understood of land and sea breezes along the shores of China, Cambodia,

Cambodia, Siam, the west coast of Sumatra, Java, Straits of Banca, and the Eastern Islands; also over all the Bay of Bengal.

In the same manner the SW. and SE. winds, having continued for five or six months, grow weak: and sooner or later in October, according as the place lies, the land and sea breezes begin to blow, from four to six, along the last mentioned shores of Africa, Arabia, Zeloan, Bengal, China, Sumatra, Java, &c. but not so frequent nor strong, as in opposite seasons; except on the Malabar Coast, where they begin to blow from Surat southward to Cape Comorin.

XXXI. *Of the LAND and SEA BREEZES on the MALABAR, GUZURAT, and GUADEL COASTS.*

Though the NE. monsoon is in general said to blow in its season, wherever the opposite SW. wind blows; yet this is not (strictly speaking) true; the Malabar, Guzurat and Guadel Coasts being an exception to it; for, though the NE. wind blows (in the proper season) through the sea westward, from the coasts to Africa, yet near the above shores it never blows steady for any time.

On the contrary, between the latter end of October and middle of November, the land and sea breezes begin along these coasts, and continue for four months and sometimes longer.

These are succeeded by almost constant winds from NNW. to WNW. which continue till the SW. winds prevail, in May and June. Therefore there are little and no land or sea breezes on these coasts, between the decay of the NE. and beginning of the SW monsoons; but from the failing of the SW. monsoon (October or November) till the strength of the opposite wind is almost spent (February or March) there are almost constant land and sea breezes; which is three times longer than any other open coast in India has the advantage of.

A ship bound to the westward, between the middle of November and the middle of January, will soon cross the track of the land and sea winds on these coasts, and get into the steady NE. winds; but later, she must be a great way off shore, before she reaches the NW. monsoon; not that the land and sea breezes ever reach far off shore, but the winds from NNW. to WNW. do; and, if so late as the middle of April, she will scarce have any NE. winds at all; but will be obliged to work with the winds from between the north and west until the SW. monsoon commences.

XXXII. *Of the NORTH-WEST WINDS on the Coast of MALACCA.*

These NW. winds in February, March, and April, blow sometimes so fresh, and cause such a sea, for fourteen or fifteen days, that even a good ship cannot work to the northward; but they seldom or ever blow with such violence forty, sometimes thirty leagues off shore.

If a land wind blows from these coasts, either in the night or morning; a ship, working along, may depend on a sea breeze, or at least a wind along the coast from the north-westward, to carry her in shore again: and neither is the land or sea breeze ever attended with squalls of thunder or rain, as the land winds frequently are on every other coast in India.

XXXIII. *Of LAND and SEA BREEZES in the BAY of BENGAL.*

When the land and sea breezes fail on the Malabar Coast, they begin (about the middle of February, or beginning of March) at the north end of Zeloan, the Coasts of Coromandel, Golconda, Orixá, Bengal, Aracan, Pegu, and Tanassary. They are usually moderate, as those on the Malabar Coast; but near the end of March (and sometimes sooner) the land winds begin at Bengal to come off from the NW. quarter, with a furious squall, much thunder, lightening, and rain; though sometimes without rain.

XXXIV. *Of LAND SQUALLS from BENGAL to ZELOAN.*

Soon after what hath been before mentioned, the land squalls begin to come off at Balasore, the Coast of Orixá, Golconda, and so proceed southward to Zeloan, where they begin to blow late in April, and continue to come off, at times, during the whole SW. monsoons, quite from Zeloan to Bengal. They blow oftener, and usually (but not always) more violent, in April, May, June, and July, than in August or September, especially between Vizagapatam and Point Palmiras.

XXXV. *Of LAND SQUALLS EASTWARD to CHINA.*

The land squalls prevail in the fore-mentioned months along the Coasts of Aracan and Tanassary, Cambodia, and China; but not so frequent, and seldom so violent, as on the Coast of Orixá.

The coast of Pegu, from the Negrais to the Syrian, is seldom or never troubled with them; but on the west Coast of Sumatra, and both sides of Java, in March and April, the land winds come off, almost every evening, in a squall; sometimes very hard, with thunder, lightening, and rain; which
being

being soon over, is succeeded by a fair, moderate land breeze, that continues usually until the sea winds begin.

The sea winds on this coast, in April and May, set in sometimes with a violent, though short squall; which seldom or never happens on any other shore.

Along the Coasts of China, Tonquin, Cambodia, the west Coast of Sumatra, and Java, a land breeze is certainly succeeded by either a sea breeze, or a wind along shore, sufficient to bring any ship, that ran off with the land breeze, in with the land again, in the same manner as is mentioned on the Malabar Coast.

It is quite otherways on the NE. side of Zeloan, the Coasts of Coromandel, Bengal, Tanaffary, and the west side of the Bay of Siam; for there the land wind, or rather the prevailing wind, will blow steadily for three, four, to twelve days, and at Bengal, and Coast of Tanaffary, often longer.

This happens on the Coast of Coromandel, and on the west side of Siam Bay, during the strength of the SW. monsoon, in May, June, and July; as those along the Coast of Tanaffary and Bengal happen at the opposite months of November, December, and January.

In the same manner, the SW. monsoons constitute a fresh, sometimes a violent sea wind on the coast of Tanaffary, Pegu, Aracan, Bengal, Malabar, and Cambodia, that blows with little variation during the months of May, June and July; as the NE monsoons do on the opposite shores of Siam Bay, the Coasts of Coromandel, Zeloan, and north Coast of Africa.

XXXVI. *Of the VARIABLE WINDS in the INDIAN SEAS.*

At a distance from the shores, the winds become variable, through all the Indian seas, northward of 12° S. latitude, in March, April, October, and November; that is, near the changing of the monsoons.

In the sea between Africa and the Malabar Coast, the NE. winds growing weak in March, are frequently interrupted; sometimes with the wind from the SE. or SW. but usually from the NW. quarter. Therefore the winds may be said to vary only between the NNE. and WNW. for in the middle of this sea, late in April, the wind has been known to blow a gentle gale for eight days, at NWbW. and NW. and, when the SW. monsoon grows weak, late in September, the same (WNW. to NNE.) winds commonly prevail till the NE. monsoon commences.

In much the same manner and time (March and October) the variable winds prevail in the Bay of Bengal; but as it commonly blows from the NW.

quarter, between Africa and the Malabar Coast, so in this bay they commonly prevail more from the NE. than any other quarter: these last are however in the other seas.

XXXVII. *Of the WINDS in the CHINA SEAS.*

Throughout the China seas, the variable winds perfectly resemble those in the Bay of Bengal.

In the southern track of sea, between 2° and 12° South latitude, the winds about the changing of the monsoon, are more perfectly variable than any where in India; however, if they prevail more from any one point than another, it is from the western quarter, or NW. to WSW.

XXXVIII. *Of the WINDS in the RED SEA, and PERSIAN GULF.*

The Red Sea, and Gulf of Persia, though only separated by Arabia, have different winds. The winds blow almost nine months in the year up the Red Sea, from the southward, viz. from the end of August to the middle or latter end of May, when the wind veers to the N. and NNW. and commonly blows so till late in August.

In the Persian Gulf, the winds blow almost nine months down the gulf, from the NW. quarter, and about three months up. These winds are not so regular, nor of such duration, as those in the Red sea; for they frequently interrupt each other, and are frequently interrupted by hard gales from the SW. chiefly off Cape Musfieldem, and sometimes by land breezes, which last prevail sometimes in the Red Sea.

In the Persian Gulf, the NW. and WNW. winds prevail almost all the time the southerly winds blow in the Red Sea, viz. from the end of September to July; from which time, till near October, the SE. winds are most frequent.

XXXIX. *Of STORMS and GREAT CALMS in INDIA.*

Squalls and very bad weather sometimes happen in most parts of India, especially during the westerly monsoons; but devouring storms, and tedious calms (almost as bad in their consequences as storms) generally happen near the shifting of the monsoons; that is, the storms, from the middle of April to the middle of June, and from the end of September to the end of November; the calms, in March, April, and May.

Between

Between the Malabar Coast and Africa, when these storms happen (which is not every year) they usually blow harder, and happen oftener, between the middle of May and middle of June; than in October and November. They first begin with hard squalls and rain, and blow chiefly from the WSW. and are preceded by a very great squall from that quarter, one, two, or three days. Those that happen in November commonly begin in the eastern quarter, and veer round to WSW. and SW. The calms in this sea are seldom of long continuance; but are most troublesome to ships bound westward, in March and April, from Cochin, &c. through the Lacadive Islands; where sometimes very little progress will be made in five or six days.

XL. Of STORMS and GREAT CALMS in the NORTH PART of the BAY of BENGAL.

In the Bay of Bengal, there sometimes happen as severe storms as any in the world; these are, however, more violent at Bengal, and along the Coasts of Orixá, Golconda, and Coromandel, than any of the shores eastward of Cape Negrais. They happen also oftener; and are generally, though not always, more violent in October and November, than in the opposite seasons of April, May, or June.

At Bengal, and all northward of Cape Negrais, the storms that happen in October and November (for they seldom or never come earlier or later) begin with a drizzling rain, and the wind about ESE. the wind then increases, and veers to E. ENE. NE. and N. and ends there; except it is extremely furious, in which case it sometimes veers to NNW. and NW. where it ends, blowing hardest from the NNE. to NNW. or NW. quarter, with heavy rain the whole time. At this season a storm will sometimes blow for a day or two, from E. ENE. to N. and then all calm for a few minutes; and then begin to blow severely at SSW. for half an hour, and quickly end with fair weather. This is not near so hard as the last-mentioned storms; but is like them, attended with much rain, and continues much longer, for the severe storms last not above six or eight hours.

At Bengal, the storms that happen at the beginning of the SW. monsoon, are early in June: the most severe begin at WSW. with rain, and veer to W. WNW. and NW. where they blow ten or twelve hours with great fury, and end.

A storm at this season, to the southward of Point Palmiras, will sometimes begin as above; and then veer from NW. to N. NNE. and NE. after which, falling calm for a quarter of an hour, it will begin again, and blow hard at SW. for an hour or two longer, and then end; or it will begin at ESE, veer

to E. ENE. and NE. then fall calm, and begin again at SW. &c. as above. These storms are not near so hard as the last-mentioned, that end in the NW. quarter; all of them are attended with rain.

XLI. Of STORMS and GREAT CALMS in the SOUTH PART of the BAY of BENGAL.

On the Coromandel Coast, and all over the Bay westward of the Andaman Islands, and southward of Cape Negrais, the storms that happen in October and November blow with great fury from the WSW. to WNW. and NW. Sometimes they begin in the SE. but oftener in the NE. quarter. The storms at the other season happen usually between the middle of April and middle of May; they always begin at NNE. veer to the NE. and E. or Ebs. where it ends. It blows hardest from NE. to E. is attended with much rain and a very great sea. The large surf on shore, with thick weather, and perhaps drizzling rain, shews its approach, twelve hours at least, before it comes. Sometimes, at this season, it will begin, as above, at NNE. veer to NE. E. S. SE. and then to SW. where it will end, with great fury: this, however, is seldom; but when it happens, is remarkably severe.

Upon this coast there happen sometimes hard gales from the NE. about January; but these are by no means so hard as the April storms. It is also remarkable, that both the April and January storms blow much harder to the southward than northward, that is, between Pondicherry and Negapatam, than Madrafs and the north end of Armagon.

If any damage arises from these storms to shipping, it is caused by the great sea, and \rightarrow too near the shore; so that, if the cable parts, they have not room to veer; for it seldom or never blows so hard but a ship may carry her courses, and clear the land, standing to the south-eastward.

Calms are seldom of long continuance here: they happen chiefly in February, March, and April, in the middle of the Bay, and near the eastern shores; also along the NE. Coast of Sumatra, quite up to the Straits of Malacca.

XLII. Of STORMS and GREAT CALMS in the CHINA SEAS.

The China seas and adjacent islands are liable to severe storms and short calms, at the same seasons, and from the same quarter, as those in the Bay of Bengal, northward of the Negrais; so that what is already said of them, is, in all respects, true here: only let it be added, that storms happen sometimes
sooner

sooner here than in Bengal; for they have been met with in August and September, as well as October and November: those in September and October are most frequent and violent.

XLIII. *Of CALMS near the EQUINOCTIAL LINE.*

Between the latitudes of 12° and 2° S. it is already said, violent storms seldom or never happen: however, there are calms that last four, five, and six weeks. These calms happen always, more or less, in March and April; and between 2° or 3° north, and 2° or 3° south latitude; and between the meridian of Bengal, and that of the Maldivia Isles. They are not of long continuance every year, though sometimes they extend beyond the above-mentioned limits.

Of the MONSOONS on the COAST of MALABAR.

XLIV. *Of the Setting-in of the NORTH-EAST MONSOON.*

After the full or change of the moon, near the latter end of October, or early in November, the fair weather sets in, and puts an end to the SW. monsoon, which is the bad weather and rainy season. This monsoon generally breaks up with thunder and lightning; and a storm of wind comes on in the SE. quarter, which blows violently for several hours, with abundance of rain; then veers round the compass, and moderates. So ends the SW. monsoon. If the SW. monsoon breaks up without a storm, there generally happens a storm in December, as was the case in 1763.

After the NE. or fair-weather monsoon is set in, as above, you may sail up or down this coast with great safety, the winds then blowing from the NW. N. to NE. not only without storms, but without squalls, or any kind of uncertain weather; so that you may carry all your sails, night and day, without any fear of squalls, storms, &c. The weather then is so serene, clear, fair, and pleasant, that no weather in any part of the world, can be compared to this on the Coast of Malabar. This weather continues during the months of November, December, January, and February: therefore these are the best months for the navigation up and down this coast.

XLV. *Of the LAND and SEA BREEZES.*

Every day, about eleven or twelve o'clock, the wind comes from the sea, and is called the sea breeze; this generally comes on at WSW. or W. a fair pleasant gale, and veers round gradually to the northward. Towards six, eight, or ten o'clock in the evening, sooner or later, as it happens, the wind comes off the land; sometimes after a short interval of calm between the breezes, and sometimes none.

The land-winds, which blow between the NE. and ESE. are sometimes but faint when they first come on, but soon increase into a fine fresh gale, which continues till nine or ten o'clock the next day, and then turns to light airs, or calm, till the sea-breeze comes in, as abovementioned. This regularity of the land and sea breezes greatly facilitates the navigation of ships sailing up and down this coast.

During the time of the land winds, you ought to take care to get a good offing in thirty fathom water or thereabouts, in order to make advantage of the sea-breeze. In that depth of water you will be five or six leagues off shore, in some places more or less. Also take care to be within two or three miles of the shore by seven or eight o'clock in the evening, before the wind blows from thence.

You may, in most places along this coast, stand in shore to twelve, ten, or eight fathom; and, if you find yourself near the land before the wind blows from thence, you may either \rightarrow , or make a small trip of it, as there is no current at this season.

XLVI. *Of CURRENTS near the MALABAR COAST.*

A great regard must be had to the currents, which, during the calm that intervenes the change of the breezes, may in a little time make you lose the advantage you have gained. If you find the current sets strong against you, it is best to \rightarrow with your coasting- \rightarrow , and wait for the breeze, either from the land or sea. In the months of November, December, January, and February, by experience there are found little or no currents. From Cape Comorin to Bombay, in that season, a ship hath passed in twenty days without letting go an \rightarrow .

In the months of March and April, the sea-breezes are stronger than in the four last months: the land winds are very faint, and seldom come off till the morning; the sea-wind, or rather the NW. or north-westerly winds continuing

ning till then ; and when the land-wind comes off, it is very scant (about NNE. or NE. by N.) so faint, and its continuance so short, that you reap but little advantage from it, being obliged to run right off shore with it to get an offing, in order to make the most of the sea-winds. The sea-wind generally comes on to the northward of west, and soon veers round to the northward ; and frequently with little winds and calms.

It often happens that the sea-wind (with which you sometimes lie a tolerable flant along shore) will induce you to stand on longer than you intended ; by which means you get close in shore, in hopes to get a spirt of land-wind, to run you off again ; but perhaps find yourself deceived.

In this case you may be obliged to stand off, with the wind at NNW. or NW. very much to your disadvantage. During the months of March and April, there are little or no land-winds ; therefore you must have no dependence on them.

The winds blow almost for a constancy from N. by E. and NNE. to NNW. and NW. and sometimes WNW. but mostly in the NW. quarter ; and at the full and change of the moon it blows very strong at NW. with a large sea, and a strong southerly current, which makes the navigation up the Coast of Malabar at this time of the year, very tedious ; but on the contrary, very favourable for sailing down it. There are sometimes spirts of wind southerly, which continue for three, four, five, or six hours, more or less ; sometimes a fresh breeze, at other times very faint ; sometimes you will have smart squalls off the land, but they are very soon over.

XLVII. *To sail up the COAST of MALABAR to advantage.*

Those who are determined to sail up along the coast, in these months, ought to keep a very good offing, as the general method will not now do ; and when they stand in shore in the evening, with the sea-breeze (as the wind generally northerns in the evening) instead of \rightarrow , to wait for the land breeze, ought to stand off again, with the northerly wind, into 30, 35, or 40 fathom water, and there \rightarrow , in order to be ready for the next day's sea breeze. The wind generally abates about midnight, and continues fainting away till ten, eleven, or twelve o'clock the next day, when the sea-breeze comes on again.

Be sure always to \rightarrow as often as it falls little wind or calm, on account of the southerly current, and generally a swell from the NW. This is the only method to get ground, and to keep what you have got.

XLVIII. *Of STRETCHING off the Coast of MALABAR.*

Commanders of ships, who have formerly experienced the trouble, fatigue and tediousness, of a passage up along the coast, in the month of May, or near that time of the year, have stretched out to the westward, and made 4, 5, or 6 degrees westing, where they have met with constant westerly winds, and made their passage to Bombay or Surat, in half the time that ships have done, by keeping along the coast: therefore this must certainly be the best way at that time of the year.

In this month (May) the weather is very uncertain, the winds variable, the sky frequently very cloudy, seemingly threatening much wind, squalls, and rain; though in general nothing comes of it; but passes off in a slight shower of rain, with much lightening, to the south-eastward. In this month the wind blows frequently from S. and SW. and sometimes very strong, especially down the coast, to the southward of Tillicherry, where the monsoon always sets in before it does further to the northward. Also it sets in to the northward (at Surat and that way) sooner than at Bombay.

Notwithstanding the uncertainty of the weather in this month, the wind is mostly in the NW. quarter, and frequently blows pretty fresh from thence; and then the weather is generally clear and fair: but when the wind is SE. south, or south-westerly, which often happens, the sky is always over-cast, &c. as if a storm was coming on.

XLIX. *Of the Setting-in of the SOUTH-WEST MONSOONS.*

Towards the latter end of May, if it happens to be the full or change of the moon, or early in June, it is sure to bring in the SW. monsoon and rainy weather. This generally comes on with the sky loaded with heavy clouds, threatening a violent storm. The monsoon begins in a violent storm, from the SE. with much thunder, lightening, and a deluge of rain, continuing for several days, with a prodigious great sea constantly rolling in upon the shore. During the month of May the weather is sultry hot, and almost insupportable; but more so some years than others.

As the SW. monsoon sets in with strong gales from the SE. the wind veers round to the south and south-westward; and indeed the wind, during this monsoon, blows mostly between the SW. and W. During the months of June and July the weather is so bad upon this coast, that the navigation thereof may justly be said to be impracticable, it being almost one continued storm and tempest of wind and rain, with a great sea from the SW. though there

there are some intervals when it ceases raining, the winds moderate a little, and the sun now and then makes its appearance: these intervals are generally but of short duration, and frequently do not happen for days together.

In August, the monsoon being more settled, and the winds more moderate, with longer intervals of fair weather, the ships that have wintered at Bombay depart thence for the Coast of Coromandel, and other parts to the eastward. In this month there is much rain, with frequent hard squalls; storms are much to be feared, and too frequently happen. The winds are mostly from SW. to W. but sometimes extend to W. by N. and WNW.

In September the weather is fairer than in August. Indeed there is more fair weather than foul; often fair for several days together, with a good deal of sun-shine: but yet you are not free from the apprehension of storms, the sky being often over-cast, and the horizon obscured with a thick haze. Sometimes you meet with heavy squalls, and much rain, with a large swell from the SW. rolling in upon the shore; and in 9 or 10 fathom water, this swell looks as if it was going to break. Some years there are storms and tempests in this month. The winds are much the same as in August, from SW. to W. and WNW. Ships frequently fail near this coast, from Bombay, in this month.

In October the weather is much the same as in September, until the full and change of the moon; and then the weather is very precarious, the monsoon generally changing at the latter end of this month, or early in November, according as the full or change happens. It always breaks up in a violent tempest of wind in the SE. quarter, with a deluge of rain, and much thunder and lightening.

It is not to be understood here, that the monsoon changes exactly at the full or change of the moon, but perhaps two, three, four, or five days before or after.

In the year 1760, the SW. monsoon broke up on the 2d of November, though the moon did not change till the 7th; and that with a violent tempest, in which his Majesty's ship Cumberland foundered, at her anchors, near Goa. In 1762 it broke up on the 6th of November, in the same manner; it was full moon on the 1st: in this the Winchelsea Indiaman, having just sailed from Bombay, suffered very much; was obliged to cut away several of her masts, and throw most of her guns over-board. Great damage was done by this storm, to several other ships that were on this coast. The Guardian, one of the company's cruisers, at the same time being on a cruise in the offing,

lost all her masts, and was in great distress. After the monsoon is changed there is the finest weather in the world, gentle gales, a smooth sea, and as fine a temperature of air as can be wished for.

Of the Monsoons and Currents near the Island Zeloan or Ceylon.

L. Of the NORTH-EAST MONSOON near the Coasts of MALABAR and COROMANDEL.

The new or full moon, at the latter end of October, generally brings about the change of the monsoon from the SW. to the NE. both on the Coast of Malabar and Coromandel; but this change of the monsoon has very different effects on the two different coasts. On the Coast of Malabar the NE. monsoon brings on the fair weather. On the Coast of Coromandel, the NE. monsoon brings on violent tempests and storms, with almost a constant heavy rain, thunder and lightening; or, during the intermissions thereof, dark, cloudy, hazy weather, and a great sea perpetually rolling in upon the shore.

LI. Of the NORTH-EAST MONSOON on the Coast of CEYLON.

As the Island Zeloan, from its situation, is equally contiguous to both the above-mentioned coasts, of consequence those parts opposite to the Coast of Malabar, from Point de Gall, along by Columbo, and the western coast of Zeloan, to the northward of Jafanapatam, partake of the fair and foul weather as it happens on that coast. Those that partake of the weather as it happens on the Coast of Coromandel, are from Dunder-Head along the eastern Coast of Zeloan to Point Pedro, or thereabout.

Along the southern Coast of Zeloan, it may with truth be said, that the westerly winds prevail all the year round, in a greater or less degree; for in the height of the NE. monsoon, there are regular land and sea breezes (in the evening the wind comes off the land at E. or NE. and about noon the seabreeze sets in from the W. and SW.) all the way between Point de Gall and Dunder-Head.

There you meet the NE. winds, blowing generally very strong; and they continue thus all along the eastern Coast of Zeloan, with a continual strong south-westerly current. This current sets off the land from Dunder-Head toward the Maldivia Islands; and thereby many ships have been driven from Zeloan to these islands, in little winds or calms, by not taking proper care to keep the Coast of Zeloan close on board; for, by keeping the coast on board,

from

from Dunder-Head till you are past Gall, you keep out of the current; and, by keeping in soundings, you may anchor upon occasion.

LII. *Of the NORTH-EAST Monsoon in the GULF of MANARA.*

In the Gulf of Manara, which lies between Cape Comorin and Zeloan, during the NE. monsoon, the winds blow constantly in the NE. quarter, and frequently very strong; but off Point de Gall it decreases, and dies away.

Most of our Directories make mention of the currents setting in and out of this gulf, at the different seasons of the year; and that a ship bound to the Malabar Coast, in the NE. monsoon, in order to fall well in with Cape Comorin, ought to coast it along Zeloan, as far as Calliture, before she crosses the gulf; and that a ship from Cape Comorin, bound to Zeloan, should take care to fall in to the northward of Point de Gall, on account of the current setting out from the Gulf of Manara. But some experienced navigators declare they have never found much out-set in the NE. monsoon, nor in-draught in the SW. monsoon, the many times they have crossed this gulf; but always found the reckoning very exact, both from Cape Comorin to Point de Gall, and from Point de Gall to Cape Comorin: however, the caution is proper enough, as you cannot err in so doing.

LIII. *Of making a PASSAGE to BENGAL, or COROMANDEL.*

Ships bound to Bengal, or the Coromandel Coast, in the NE. monsoon, coast it along Zeloan, as far as Dunder-Head; the strong NE. winds and SW. current preventing their coasting it further along this island. From this place, or hereabouts, they generally put off the coast, and stretch over to the eastward, and make Acheen-Head, or the Nicobar Islands; from whence the Bengal ships generally keep along the east coast, all the way; but those bound to the Coast of Coromandel stretch over again, from thence or thereabouts, across the bay, for the Coast, taking care to fall in to the northward of their port, on account of the current which always runs strong to the southward, in the NE. monsoon.

Sometimes ships, by doing as above mentioned, make very speedy passages, and sometimes the reverse.

Many instances have been known of both kinds; among which are the following.

In December, 1760, admiral Cornish sailed from Tillichery, with a Squadron of his Majesty's ships, bound to Madras. They took their departure from
the

the SE. part of Zeloan, stood over to eastward, and made, by their reckoning, between 13 and 14 degrees easting; having been out of sight of land twenty-three or twenty-four days, and expecting to make the Nicobar Islands; but, to their great surprise, they made the Island Zeloan again.

In December, 1758, his Majesty's ship Queenborough sailed from Bombay for Madrafs, with five sail of Indiamen under her convoy. They took their departure from Dunder-Head, or thereabouts, and stretched off to the eastward. The Shaftesbury, one of the Indiamen, being a very heavy sailer, the rest parted company with her, and left her to shift for herself.

They continued standing to the eastward, and made a tolerable passage to Madrafs in forty-one days; and then, to their great surprise, found the Shaftesbury at Madrafs, and that she arrived ten or twelve days before them. The Shaftesbury coasted it near Zeloan, and kept in shore all the way to Madrafs, and arrived about the beginning of February; therefore it may be, that all passages made from Zeloan to Bengal, or the Coast of Coromandel, in the NE. monsoon, are entirely the effect of chance, and merely accidental, whether good or bad.

LIV. *Of a PASSAGE near the SOUTH COAST of ZELOAN, from MARCH to OCTOBER.*

At the latter end of March, or beginning of April the westerly winds begin to set in strong at Point de Gall, and thereabout. They blow constantly till October; but do not reach so far as Trincomalay, or Point Pedro, till the latter end of April, or beginning of May.

In the month of April, about Batacalao, Trincomalay, and Point Pedro, and all that part of Zeloan, you have the winds variable and moderate; the sea-winds in the day-time are from E. to SE. and generally veer round to the southward towards evening. Early in the night the wind comes off the land from SW. to W. During this month (April) you have a very strong northerly current about this part of Zeloan, (from the Friar's Hood to Point Pedro) running in common $1\frac{1}{2}$ knot, and many times 2 knots, from NNW. to NNE. so that ships at sea, bound to Trincomalay, at this time of the year, should take care to fall in 10 or 12 leagues to the southward, on account of the current setting so strong to the northward. The nearer the land, the stronger the current; but 20 or 22 leagues from the land you have none of this current.

The Squadron found the bad effects of not keeping to the southward in April, 1762, in-a passage from Madrafs to Trincomalay: then the squadron fell

fell in a little to the northward of Trincomalay, were in sight of the flag-staff point, yet were driven by the current half way to Point Pedro; and some ships did not get in for seven or eight days after they made the land. If they had kept to the southward of Trincomalay, as above mentioned, they might have got in the same day they made the land. It was advised to keep to the southward of Trincomalay, and to make the land in eight degrees latitude; but that advice being rejected, the consequence was as before mentioned, and the squadron was seven days longer at sea before they got into Trincomalay Harbour.

LV. *Of a Passage near the NORTH-EAST COAST of ZELOAN, in MAY, JUNE, JULY, AUGUST, SEPTEMBER, and OCTOBER.*

About the eighth, tenth or twelfth day of May, the westerly winds set in strong about Battacalao, Trincomalay, and Point Pedro; and blow so, without intermission, all May, June, July, and August. When these westerly winds come in, the current setting strongly to the northward ceases: so that from Batacalao to Trincomalay, Point Pedro, and to Negapatam, there is not found any current in these months, nor till the middle of September. Then the winds begin to vary, and the current always goes with the wind.

From Batacaloa to Trincomalay and Point Pedro, in August, the westerly wind sometimes ceases about noon, and is succeeded by a sea-breeze at E. or SE. till towards evening, when the westerly wind comes strong off the land again. These kinds of winds will frequently happen in August, with some rain.

In September and October, the winds and weather are much the same as on the Coast of Coromandel; and about the new or full moon, the latter end of October, the current runs as fast to the southward, as it did in April to the northward. Off Point Pedro, about that time of the year, in sight of land, and in soundings, the current several times in the day hath been found to set different ways; yet by the next day at noon it hath set forty-eight or fifty miles to the southward, more than the run would give it in twenty-four hours; so that in forty-eight hours a ship has been set from Point Pedro to Friar's Hood, with little wind, and the weather hazy, with rain. When it has cleared up, looking out for Trincomalay, the ship has been found a-breast off the Friar's Hood, and been obliged to coast it back again to Trincomalay, close in shore. The current in those forty-eight hours had set the ship ninety-four miles more to the southward than the run would give; and not only to the southward, but the eastward.

Therefore

Therefore ships from the Coast of Coromandel, bound to Trincomalay, at this time of the year, should be sure to make the land about Point Pedro, and keep Zeloan close on board, to prevent being set past their port by the current, which runs 2 or 3 $\frac{1}{2}$ knots to the southward and south-eastward, at this time of the year.

By all means let them be advised to keep in soundings, and in calms and light winds to \leftrightarrow if they find they deepen their water; for the current will set them out of soundings, in a calm.

At other times of the year there has not been found any current between Batacalao and Negapatam; for when the westerly winds set in strong, the current ceases hereabout, within five or six leagues from the coast.

Of the Monsoons and Currents near the Coast of Coromandel.

LVI. *Of the SOUTH-WEST MONSOON.*

The months of June and July differ but little one from the other, the SW. monsoon being then in its height; and the land-winds blow constantly, for several days together, very strong at WSW. and W. When they are moderate, you commonly have a sea-breeze from S. SSE. or SE. this brings about a very agreeable change of air that is very refreshing; for the westerly winds, during these two months, are sultry, hot, and almost insupportable; they are very unhealthy, but more so some years than others.

These land-winds sometimes blow with such violence, that they darken the air with the dust and sand they raise from the shore; they reach a good way off at sea: but this happens only in dry seasons; for when the squalls are more frequent, the rains prevent this effect of the winds. Commonly about the end of June, and in July, rather in August, the squalls and rain are more frequent. When the westerly winds blow the hardest, it hath been remarked, there is frequently the greatest surf on the shore, particularly at Madras, where many of the bar-boats have been overset at these times. These months the currents sets strong to the northward. In the offing the winds are constant from SW. to W.

Early in the month of August the land-winds begin to be not so lasting; but you have more regular sea and land breezes from the SE. veering toward evening to S. and so to SW. nevertheless you have frequently hard squalls off land, with much rain, and sometimes thunder and lightening.

Towards

Towards the end of August, these hard squalls frequently come from the WNW. and sometimes NW. they come on in the NE. quarter, and blow very smart for an hour or two, with much rain; then varying round to ESE. and S. blowing very strong all the while; then sometimes back round to the eastward again, in a hard squall, with rain. When it veers round to the SW. you have moderate and fair weather. The current continues strong to the northward all this month.

In the month of September the weather is uncertain, and the winds variable with squalls and rain; but though the winds and weather are inconstant, the westerly winds prevail more than any other, often varying from SW. to W. and so round to NE. The day-breezes blow sometimes from NE. but oftener from SE and SSE. In general from whatsoever quarter the wind blows, it is very moderate; except a few squalls, which are violent when they blow from the land, but of short duration. The currents, which all this monsoon set with the wind strong to the N. and NNE. slacken in September; so that about the time of the equinox they make to the southward, and run strong by the end of the month.

October is the most inconstant month of the year on this coast; the winds are then exceeding changeable, with frequent squalls, calms, rain, and fair weather. The NE. monsoon is not perceivable till the middle, or towards the latter end of this month; nor is it certain then. The currents during this month set strong to the southward.

LVII. *Of the setting-in of the NORTH-EAST MONSOON near the Coast of*
COROMANDEL.

At the setting-in of the NE. from the SW. monsoon, when the winds vary toward the SE. they are pretty fresh, but when to the NW. little winds and frequent calms. Sometimes in the forenoons it will blow fresh from the eastern board, and sometimes for two, three, or four days, from NNW. very fresh, with hard squalls and rain; and in the afternoons, from NE. or ENE. with thick rainy weather, and a prodigious great swell continually rolling in upon the shore, which makes the landing, or coming off shore, almost impracticable.

This variety of squalls, rain, and dark, cloudy, hazy weather, obscures the horizon, seems to threaten violent storms and tempests, which, however, seldom happen; but when they do, they generally prove fatal to ships which remain upon the coast at such times; therefore all ships should depart this coast by the 10th, 15th, or 20th of this month, at farthest.

A melancholy instance of this happened at Madras on the 21st and 22d of October, 1763. It was full moon the 21. This day the storm came on in the same manner as at Pondicherry, with the wind at NNW. and N. his Majesty's ships Norfolk, America, and Weymouth, also a great number of merchant-ships, being in the road. The men of war, foreseeing the storm coming on, prudently slipped, and went to sea before the wind came to the eastward; the merchant-ships, by not following their example while the wind was to the northward, but lying in the road till the wind came to the eastward, found it out of their power to go to sea. Many of them foundered at their \rightarrow ; others were driven a-shore, and entirely lost. This loss was computed at twelve lack of rupees, besides the loss of many lives: but, although the men of war got out, and had sea-room enough, they lost all their masts, and were in great distress; so that it was with great difficulty they could keep above water, the sea running very high, and so confused, that it ran in heaps, and stove in their stern-windows, and washed every thing overboard out of their great cabin and ward-room.

This great and confused sea was occasioned by the wind blowing so hard at north for several hours, and then flying about so suddenly to the eastward, where it blew hardest of all. This gale lasted almost two days. These storms are confined sometimes within very narrow bounds; they are very violent at some places, and hardly felt at others.

The storm at Pondicherry, 1761, was but little felt at Madras, and much less at Tricaba and Negapatam: some of the men of war coming from Trincomalay, were at sea in the offing of these two places, and felt little of it; but had a great and confused sea: nor was this storm felt so far to the southward as the last-mentioned places, although so violent at Madras.

The storms that happen in the NE. monsoon very seldom reach so far to the southward as Trankabar or Negapatam; and the storms that happen in the petty monsoon, on the full or change of the moon in the latter end of April, or the beginning of May, seldom reach so far to the northward as Madras, but mostly happen on the south part of the coast. In this monsoon it is also very dangerous, as happened in 1749, when his Majesty's ships Namur and Pembroke were lost, with all their crews, off Porta Nova; as were several other ships; and all the squadron suffered very much.

LVIII. *Of the NORTH-EAST MONSOON near the Coast of COROMANDEL.*

How far soever the NE. monsoon may be advanced in this month, you have, during its continuance, variety of winds, mostly from NNE. and NE. They

They commonly blow in the morning from NW. and NNW. and in the afternoon from NNE. to NE. and sometimes from SE. to SW. for a day or two; but this does not frequently happen. The former part of this month is subject to calms for several days together: these are commonly followed by storms, with abundance of rain, which happen more at this than any other time of the year. They are often so violent, that no ship can possibly ride at \rightarrow ; generally beginning at NW. and from thence chopping successively to NNE. ENE. and E. and the sea rises so prodigiously as to foam a league off the shore.

If these tempestuous winds shift from east to south, they moderate, and the sky grows clear: but if, after having blown violently from the NE. a calm ensues, presently it blows hard from SE. S. or SW. with rain and a great sea. Some years these hurricanes have not happened, or they have not blown so violent; so that ships might ride safe in the roads; but as this is precarious, it is better not to abide on this coast. Strong southerly currents all this month. Out in the bay the winds blow from NNE. to ENE. with frequent storms and much rain.

The monsoon is more regular in December, the winds are more constant, and there is less rain. On the coast they generally blow in the morning from NW. and NNW. and at noon from NNE. to ENE. It commonly rains, if the wind varies but from NNW. to N. as it does sometimes. When it blows very hard for two or three days together, this occasions a very great sea, so that no boats can pass to or from the shore. Notwithstanding this bad weather, and the ships in the road suffer, they may ride it out if they have good cables and \rightarrow . Some years the winds are nearly alike, at the full and change, in December and January; the same for the middle of February, when the January moon is late; but in general they are not so strong in January and February as in December. The currents set strong to the southward. In the bay the winds are between the NNE. to ENE.

During January, February, and March the weather is generally very fair, mild and pleasant; the sky serene; the sea so extremely smooth, that often a ship's boat may land on the beach at Madras. There is generally a greater surf there than at any other part of the coast; and without storms; or, if they happen, they are but of short duration: so that these are the finest months in the year on this coast.

The winds, in these months, are mostly from ENE. and NE. in the day, and varying to NNW. or NW. in the night; or, more particularly, about

the full and change of the moon. After midnight the winds blow from N. to NW. a little fresh, sometimes to the SW. and sometimes it is a calm; but when there is a brisk gale, it lasts uninterrupted till nine or ten in the morning, and from that time frequently calm: sometimes it varies round to the W. and SW. with light airs, till about noon; when a little sooner or later, the sea-breeze sets in from the SE. varying to ENE. and NE. in the afternoon. But, whatever way the winds blow, the weather is always mild and moderate. In February the NE. monsoon grows weak, the southerly winds opposing it, especially towards the latter end of the month.

Some years these winds set in sooner on the coast than others. Ships that sail at this time for Europe have often met those southerly winds, and been obstructed by the currents which set with the winds; but they are easily relieved by the first northerly or easterly winds, especially if they are far off shore, where the monsoon always lasts longer.

The northerly winds continue some years till the end of March, but seldom without a revolution from the southward. In the offing, and the bay, the winds are mostly in the NE. quarter; but sometimes vary from NE. to SE. and sometimes, but very seldom, to SW. The current generally changes with the winds, mostly to the southward, and sometimes very strong.

Notwithstanding January, February and March, are the three finest months in the year, on the coast of Coromandel, yet January is not free from storms, especially if the moon is near the full or change, in the beginning of this month. A most melancholy instance of this happened on the 1st day of January, 1761, though the moon did not change till the 6th of this month. Pondicherry was at that time besieged by the English, and all our squadron before that place. The gale came on in the morning, blowing strong at NNW: and kept increasing till evening; then it blew excessive hard, with a prodigious swell from the eastward: the sea looked quite white, from the motion it was in, raising the mud from the bottom; the sky was entirely overcast with a most wild and dismal appearance: some of the ships in the evening parted their cables and went to sea. The admiral made the signal to cut or slip, and put to sea; and soon after, the wind flew about to the NE. and blew a violent storm, with a deluge of rain; this continued some time, and then abated, or rather lulled; but at the same time the sky looked very terrible in the SE. and the wind veered round that way. Soon after came on a most violent hurricane of wind and rain, harder than it had been at any time before: it continued so for several hours; then veered round to southward, and moderated.

Our

Our squadron suffered much in this storm: his Majesty's ships *Sunderland*, *Duke of Aquitain*, and the *Duke* store-ship, foundered, and their crews perished; the *Newcastle*, *Queenborough*, and *Protector* fire-ship, were driven on shore, but their crews saved; and most of the squadron lost their masts, and suffered much in other respects.

April is a very precarious month; the weather being very uncertain, and the winds variable, with some rain. In the beginning of this month the monsoon dies away, and you have the winds from the sea at ESE. or SE. Sometimes you have fresh gales, varying toward the evening round to SW. frequently little wind; but seldom calm on shore, or coastways; except before some gale of wind, or the return of the NE. monsoon.

This return of the NE. monsoon makes the April moon dangerous on the Coromandel Coast; but it does not always bring storms, though the weather looks very threatening. You may have fresh gales, with squalls and much rain, that hold for two or three days, with a great swell from the eastward; therefore you had better, at this time, take a proper birth from the shore, in 16 or 18 fathom water: the sea at these times is ready to break in 8 fathom, so that the swell alone is sufficient to make a ship part her cables.

The English squadron was so circumstanced, in 1760, off Cuddalore, riding in 7 or 8 fathom water: had the gale then set in as it threatened, it must have proved fatal to them. This is called the petty monsoon. In the April full moon there have been sometimes violent storms and hurricanes, by which many ships and lives have been lost, and great damage done. In some years, about the end of April, the westerly winds blow for two or three days together. Out in the bay there are little winds, variable, with calms; the wind mostly from NE. E. and SE. yet sometimes it blows a fine fresh gale at NE. for two or three days together.

In the month of May the winds blow mostly from SE. and SSE. and from this quarter the strongest, and continue for several days together without intermission. When these winds are moderate, they commonly begin about nine or ten o'clock in the morning, and continue till nine or ten at night; then they shift to the SSW. and SW. till about the usual time of nine or ten o'clock in the morning, when they shift again, freshen, and blow strong from SSE. and SE. Some years, in this month, you have squalls of wind from the NW. that last an hour or two, with rain and thunder.

The sky is generally clear, except sometimes in the evening it is cloudy in the western board, accompanied with lightening. When it blows fresh in the day-time, the weather is hazy, and the horizon somewhat obscured.

Between

Between the sea and land breeze it is sometimes calm, though very seldom. The breeze is strongest when there is no calm; and the SW. wind shifts to S. SSE. and SE. During this month the currents run very strong to the N. and NNE. along the Coast of Coromandel.

A General Account of the Monsoons near the Coast of Coromandel, and other Places in the Bay of Bengal.

LIX. *Of the WESTERN MONSOON.*

During the month of March, near the Coast of Coromandel, the weather is generally very mild, the sky serene, and without storms; or, if they happen, they are of short duration.

After midnight the wind blows from NW. a little fresh, varying to the SW. and sometimes calm; but when it is a brisk gale, it lasts uninterruptedly till nine or ten in the morning. After twelve at noon, and seldom before, begins the breeze from SE. varying to ENE. sometimes as far as NE. These little shiftings happen particularly when the February moon continues long in March.

Off in the bay the winds vary from SW. to S. and from E. to ENE. The currents change in the same manner; but they are more subject to set northward, because the southerly winds are most frequent. It is nearly the same along the coast.

In the months of April and May the currents are strongest; then they set N. and NE. In these months also the breezes are freshest, and from the SSE. It is seldom calm in April, but when the March moon is late, and before some gale of wind, or the return of the northern monsoon.

Near the Coast of Coromandel, the return of the monsoon makes the April Moon dangerous; but it does not always bring settled storms, only some squalls and rain, that hold on or off two or three days. In this uncertainty, you had better (during this moon) sail two or three leagues off shore, in 15 or 16 fathom, to avoid all danger. This admonition relates only to this coast; for, in the bottom of the bay, the gales of winds and storms are much more frequent.

The regular breezes above mentioned, that blow from the SSE. commonly begin at nine or ten o'clock in the morning, and continue till nine or ten at night, and sometimes all night. In the morning, before the SSE. breezes begin, the winds blow from the SSW. and SW. When they are fresh, the SSE. breeze is strong.

In some years, about the end of April, the westerly winds blow for two or three days.

The sky is generally clear; except sometimes in the evening it is cloudy in the western board, and accompanied with lightening. When it blows fresh in the day time, the horizon is somewhat obscured to the eastward.

In the month of May the weather is more settled. In the morning the land breezes from SW. to W. are generally pretty fresh. When they are very strong, they last much longer than in April: this is the reason why the sea-breezes from the SSE. to S. do not begin till the afternoon, and end at nine or ten at night, as observed before; and consequently are of shorter duration. This happens mostly towards the end of this month, when it sometimes blows from W. to SW. for three days together, very strong about the middle of the day, but moderate in the morning and evening.

Between the regular land and sea-breezes it is generally calm; when there is none, the breeze is strong, and the SW. winds shift to the South; SSE. and SE.

Some years there are in this month squalls of wind that last an hour or two. These come mostly from the NW. and seldom from the eastward. When they are attended with rain and thunder, it blows the less.

In the bottom of the Bay of Bengal, the Months of April and May are dangerous; for besides the hurricanes which blow violently some years, you generally meet with heavy squalls from the northward, which last five or six hours, sometimes longer; and mostly they happen every two or three days.

During these two months, the winds that blow in the offing, are from the SSW. to SW. and in May WSW.

The months of June, July and August differ but little one from the other: the western monsoon is then in its height. In the offing, the winds are constant from SW. to W. especially in June and July; but, at the end of August, they frequently blow from WNW. and sometimes NW. Near the Coast of Coromandel, the land-winds are not constant; but you commonly have the sea-breeze from S. to SE.

The W. and SW. winds, during these three months, are sultry, hot and insupportable; but more so some years than others. They sometimes blow with such violence, that they darken the air with the dust and sand they raise from the shore; and these clouds of dust reach a great way off at sea: this happens mostly in dry seasons. But when the squalls are more frequent, the rains prevent this effect of the wind: this is commonly experienced about the
end

end of June, and in July, rather than in August; then the squalls and rains are more frequent.

When the westerly winds blow hardest, the sea is smooth along shore, especially at Pondicherry. Then the country vessels pass the bar easily, which at all other times breaks very much, and sometimes is not passable.

Although it is pretty fine weather, at this time of the year, on the coast of Coromandel, it rains abundantly in the bottom of the bay, at Ballafore, Chatigan, Arrakan, and on the Coast of Pegu, Siam, and other places in the east.

The SW. winds blow very strong, at this season, in the Ballafore road; so that the pilots for the Ganges cannot get aboard the ships. Here especially you ought to be well provided with good \rightarrow and cables.

The month of September, though inconstant, is more subject to westerly winds than to any other. They vary from SW. to North. The day breezes blow sometimes from NE. but oftener from SE. and SSE. In general, from whatever quarter it blows, it is very moderate, except a few squalls.

In the bottom of the bay, you have little wind from the middle of August to September; but abundance of rain.

The currents, which all this monsoon set with the winds to the NE. slacken in September; and on the Coast of Gergelin, about eight days before the equinox, they make to the southward; and are rapid at the end of the month. This is a great help to such ships as sail, at this time, from Bengal for the Coast of Coromandel, or other parts.

Almost every year, soon after the equinox in September, you have strong easterly winds in the bottom of this bay, on the Coast of Orixá, and at Ballafore; whereas in the middle of the gulf, the winds commonly blow from the NW.

LX. *Of the EASTERN MONSOON.*

On the Coast of Coromandel, the month of October is the most inconstant in the year. The winds there are then changeable, frequent calms, rains, and fair weather. The NE. Monsoon is not perceivable till the end of this month; nor is it certain then. At the change of the SW. monsoon the winds vary; towards the SE. they are pretty fresh; but, when towards the NW. they are weak, and frequent calms. Sometimes in the morning it will blow fresh from the eastern board; and sometimes, for three or four days, the winds in the morning blow from NNW. and in the afternoon, from NE.

A variety

A variety of squalls, rain, and dark clouds, that obscure the horizon, seem to preface violent storms; these, however, seldom happen. It is on this account, that all the ships leave this coast about the 20th of this month, either to winter on the eastern coast of the bay, or for any other destination.

At Bengal, the rains are commonly over by the 13th or 20th; but the Ganges continues to overflow till the end of this month, which is more subject to storms and tempests than on the Coast of Coromandel; though there it often blows very fresh from NE. to E. Therefore the ships that depart late (at the end of September, for instance) from the Coast of Coromandel for Bengal, should keep out at sea, or they will run great risk of being lost on the Coast of Orissa.

How far soever the month of November may be advanced, in the NE. monsoon, you have, during its continuance, variety of winds; mostly from NNE. or in the morning from NW. and NNW. and in the afternoon from NNE. and NE. but sometimes from the SE. and SW. for three or four days. The former part of this month is subject to calms for several days, and commonly followed with storms, which happen more at this than any other time of the year. They are so violent, that no ship can possibly ride at \rightarrow . They generally begin from the NW. and chop successively from N. to NE. ENE. and East. The sea then rises so prodigiously, that you see it foam a league off. When these tempestuous winds shift from east to south, they moderate, and the sky grows clear; but if, after having blown violently from NE. a calm ensues, presently it blows hard from SW.

Some years these hurricanes have not happened, or they have not been so violent, so that a ship might ride safe in the roads; but, as this is so precarious, it is better not to tarry on the coast.

Out in the bay the winds blow, in November, from NNE. to ENE.

In December and January the monsoon is regular from NE. to ENE. On the coast the winds in the morning generally blow from NW. and NNW. and about noon it begins to blow from NNE. to ENE. It commonly rains if the winds vary from NNW. to N. and it does sometimes when from the NE; but then it blows very hard, for two or three days, and the sea runs so high, that no vessel can go over the bar. Notwithstanding this bad weather, whereby the ships in the road suffer, they may ride it out, if they have good cables and \rightarrow . Some years the winds are nearly alike, at the full and change, in December and January, and the same in the middle of February, when the January moon is late; but in general they are not so strong in January and

February as in December; and it has been remarked, that there have been more years wherein these months are fine than the contrary.

In January and February the weather is mostly fair and moderate, especially when it has been bad weather in November, or the beginning of December. As for the currents, they follow the direction and force of the winds.

The month of February is a continuation of the NE. monsoon; then it grows weak, the southerly winds opposing it, especially after the 15th. Some years these winds set in sooner on the coast than others.

The ships that sail for Europe at this time, have often met these southerly winds, and have been obstructed by the current, which set with the winds; but they are easily relieved by the first northerly or easterly winds, especially if they are far off shore, where the monsoon always lasts longer.

The northerly winds continue some years till March, but seldom without a revolution from the southward. On the coast the NW. winds blow in the morning, and now and then the SE. breezes; in the afternoon, the weather is always mild and moderate, whatever wind blows.

LXI. *Of MONSOONS in the CHINA SEAS, and near the PHILIPPINE ISLANDS.*

From the Straits of Sincapore, throughout the China Seas to the Philippine Islands, the monsoons are nearly the same as on the Coast of Coromandel, and parts adjacent.

In the China Seas the SW. monsoon sets in about April, and continues to the beginning of October.

In June, July, and August, they have much rain, and sometimes fresh gales of wind in these seas.

In September the winds are favourable, and sometimes from NE. to E. and SE. blowing fresh with rain; but in general they are from the SW. quarter, and continue thus to the new or full moon, at the beginning of October: then they generally break up in a violent storm from the SW. Sometimes the storm comes on at W. or NW. with abundance of rain. When the storm ceaseth, the wind shifts gradually round to the N. NE. or ENE. in which quarter it continues all the NE. monsoon.

The whole month of October is rather dangerous. In this month they have generally some rain; but after that the weather becomes fair and settled, and the navigation of these seas is reckoned very safe.

About 25 or 30 leagues to the eastward of the Nicobar Islands, in the Indian Sea, you lose the SW monsoon, and have the winds favourable from
W. to

W. to N. sometimes SE. S. or SW. but most from the NW. quarter, with some hard squalls, and rain, which come always from the NW. quarter, and are of great service to ships bound to the south-east through the Straits of Malacca. In these squalls you ought to carry sail, because thereby you will greatly facilitate your passage.

At other times you will meet with little winds that are variable, also calms, quite through those straits. But as soon as you get clear without Pedro Blanco, and the islands off point Romania, you then get hold of the SW. monsoon again, which blows fresh quite through the China Seas to the Philippine Islands.

The NE. monsoon blows from October to April; but in January it is reckoned to blow hardest. Frequently you have much rain, and a pretty large sea, with intervals of fair weather, throughout the China Seas; but you will be most likely to have this weather near Pulo Sapata and off Pulo Auore.

As soon as you enter the Straits of Singapore, you lose all that rough weather; and all the way through the Straits of Malacca to Acheen-head, you will have moderate and fair weather, little winds, variable winds and frequent calms.

Sometimes, in Malacca Road, you will have frequent land-winds from NE. to E. but you do not find these winds in any other part of the straits, till you get to Acheen-head; there you meet with the NE. monsoon.

Of Currents in the East India Seas.

LXII. *Of CURRENTS in general in the INDIA SEAS.*

The currents in the East-India Seas, like those in the other seas, are so various and uncertain, that it seems impossible to give any general account of them for all times and places, otherwise than as they have been found by experienced navigators. The winds are found chiefly to cause currents, but more especially so in shoal water; therefore currents are commonly near the shores: but, though the winds principally occasion currents near the shores, yet great streams from adjacent rivers, co-operating with the winds, often increase these currents. On the other hand, the direction of these streams often retards and sometimes causes a current to run against the winds. The situation of the place, as an island, strait, bay, &c. binds, breaks, and otherways influences the general currents; so do the moon, and storms of winds, sometimes: but such are of short continuance.

LXIII. *Of CURRENTS near the Coasts of AFRICA, ARABIA, the RED SEA, PERSIAN GULF, and GUADEL COASTS.*

Along the NE. Coast of Africa, from Cape Basses to Guardefoy, and from thence along the Coast of Arabia to Cape Rosalgat, and on the Guadel Coast, the current begins to set, from the SW. quarter, in March and April, and continues till September; after that, it sets from the NE. during the other six months.

From May to September the stream commonly runs out of the Red Sea; and from October till May, runs into it from the ocean.

In the Persian Gulf the current generally runs out, all the time it is running into the Red Sea, from the ocean; and it runs in from May to September, whilst the stream is running out of the Red Sea.

LXIV. *Of CURRENTS near the COAST of GUZURAT round to BOMBAY.*

From Bombay to Diu Head, there is seldom any remarkable current; that track having commonly regular and strong tides, except in September, then the strong freshes out of the Rivers Cambay, &c. cause a strong current to the southward.

LXV. *Of CURRENTS near the MALABAR COAST.*

From Bombay southward to Cape Comorin, there is almost a constant current. Sometimes it is very small, from NNW. and NW. except from October to January; then there will sometimes be a brisk current from the SE. running chiefly between Cape Comorin and Cochin; but seldom reaching more northerly, or lasting long.

LXVI. *Of CURRENTS in TUTTACAREEN BAY.*

In Tuttacareen Bay, there is commonly a small current to the northward, from May to September; and the other half year, from the northward to the southward.

LXVII. *Of CURRENTS near ZELOAN.*

From Barbarian Island, along the south side of Zeloan, there begins to run a strong current to the eastward, early in May; and it usually continues till September. In those months there is little or no current near the east side of

of Zeloan, viz. from about Anquin to Crankanella; but from that bay the current again begins to run along the shore to the northward, and continues across the gut to the Coast of Coromandel.

From the latter end of September, (sometimes sooner) to February, the current runs from Point Pedro, along shore, to the SE. SSE. S. SW. and W. quite round to Point de Gall, where it ceases; and the current out of Tutta-careen is met.

LXVIII. *Of CURRENTS near the COASTS of COROMANDEL, GOLCONDA and ORIXA.*

Very near the shores of Coromandel, Golconda, and Orixá, about the latter end of January or early in February, the current begins to run to the northward, and continues, with little intermission, till about the latter end of August; then it changes, and runs (near the shores) to the southward, until January.

LXIX. *Of CURRENTS near the COAST of BENGAL.*

From Balasore eastward, along the bottom of the bay, to Chittigong, tides out and into the rivers, prevail most part of the year, except in September, October and November; then there is usually a current to the WSW.

LXX. *Of CURRENTS near the COAST of ARACAN.*

Between Xittigam or Chittigong, and Cape Negrais, there is seldom any strong current, and oftentimes none. From the middle of December to May, there often runs a small current to the southward; and from June to September, to the northward.

LXXI. *Of CURRENTS near the COAST of PEGU.*

Along the Pegu shores, the currents are much the same as from Balasore to Xittigam or Chittigong.

LXXII. *Of CURRENTS near the COAST of TANASSARY.*

The coast, from Junkcelone-Head northward to near Martavan, is more subject to tides than currents; however, when any happen, it is commonly from the NE. quarter, in September and October; or from the SW. quarter, in November to March.

LXXIII.

LXXIII. *Of CURRENTS in the BAY of BENGAL.*

From the end of September to near Christmas, through the whole Bay of Bengal, there generally prevails a current, more or less, westward of S. or westward of N. for it runs both ways at times, though the first is much more prevalent than the last.

LXXIV. *Of CURRENTS in the STRAITS of MALACCA.*

Various tides some very strong ones, prevail through the straits of Malacca; but they are not so regular as at Bombay, and some other places. They are considerably influenced by currents from the adjacent seas. These currents are of short continuance; and commonly from the eastward in November, December and January; but from the westward in May, June and July.

LXXV. *Of CURRENTS near the WEST COAST of SUMATRA and JAVA.*

Along the west Coast of Sumatra, and S. of Java, the current commonly runs as the monsoons blow, viz. from the NW. between October and May, and from the SE. from May to October.

LXXVI. *Of CURRENTS in the STRAITS of SUNDA.*

In the straits of Sunda sometimes the currents are very strong, especially in the narrowest part; but they are not very steady. From January to April, the current generally runs from the westward into the straits; and all the other part of the year, it commonly runs out of the straits from the eastward.

LXXVII. *Of CURRENTS in the STRAITS of BANCA, BAY of SIAM, the COAST of CHINA, CAMBODIA, &c.*

In April the currents begin to run more or less, to the northward, through the Straits of Banca, and past the Straits of Malacca, and along the W. side of Siam Bay. But along the NE. side of the Bay, the currents run pretty strong to the ESE. until eastward of point Uby; then they bend to the NE. quarter, and run along the Coasts of Cambodia, Cochin-china, and China, till September, when the opposite monsoon and currents begin to prevail from the NE quarter, and continue to March or April.

LXXVIII. *Of CURRENTS in the CHINA SEAS.*

Through the China Seas, at a distance from the shores, the current generally runs, more or less, to the NE. quarter, from the middle of May to the middle

dle of August ; and the same way from the middle of October to March or April.

LXXIX. Of the Quantity of CURRENTS in the INDIA SEAS.

Through the China Seas, and along the adjacent shores, the currents from the NE. quarter are commonly much stronger in October, November, and December, than the opposite currents are in May, June and July. They run particularly strong within the islands and shoals, that lie near the shores : this many ships bound to Canton, and which have been driven among the islands to the westward, have experienced ; for they have been obliged to warp up quite to Mocoa.

The strongest currents, in these seas, are along the Coasts of Cambodia, the latter end of November. From Cape Avarillo, till beyond Pulo Caceir de Terra, it certainly runs from fifty to seventy miles to the southward, every twenty-four hours. Some part of the stream running into the Straits of Malacca, causes the tides to run nine hours one way, and only three hours the other. The same happens sometimes in May and June, from the current caused by the SE. and SW. monsoons.

LXXX. Of CURRENTS in the STRAITS of MALACCA, BANCA, and SUNDA.

Through the Straits of Banca, during the neap tides, the current will run two or three days one way. Though the streams in the Straits of Malacca, Banca and Sunda, partake in a great measure of the nature of tides, they never run so strong in the two first as in the last. From Bantam Point to Angar Point, the currents will sometimes run from the eastward, two or three miles an hour, for two or three days together : this happens chiefly in June, July and August. The strongest streams in the Straits of Banca, run to the southward, from the middle of November to the middle or end of January.

LXXXI. Of CURRENTS near the WEST COAST of SUMATRA and JAVA.

Along the SW. Coast of Java and Sumatra there is not usually any strong current, those caused by the monsoons seldom running above half or three quarters of a mile an hour ; except off Flat Point, where the stream runs sometimes strong to the northward for several days : but this is properly the Strait of Sunda.

LXXXII.

LXXXII. Of CURRENTS in the Bay of BENGAL.

The current from the NE. quarter, in the Bay of Bengal, like that in the China Seas, runs generally much stronger than the opposite currents, especially off Jagrenat Pagoda; there it is thought to run strongest.

It will run for many days from two to four miles an hour, late in October and November; but the current from SW. seldom runs above half so strong.

Hard gales of wind, that happen sometimes at the begining or during the SW. monsoons, have been known to cause a strong current to the southward, along the western shores of the bay, for two or three days, even in the months of April, May, June, July, and August; but there seldom or never is any check to the current near the shores, from the NE. quarter, in October and November.

Eastward of the Syrian river is the Coast of Martavan, where the tides are so strong that no \leftrightarrow or cables can hold a ship. The floods come in with a boar, or surf, from ten to fourteen feet perpendicular height; therefore all ships should carefully avoid this track.

LXXXIII. Of CURRENTS near ZELOAN.

The currents round Zeloan are liable to sudden and unaccountable alterations. A ship has been forced to \leftrightarrow in a calm, near Barbarian Island, by a current, or a tide setting at the rate of three miles an hour, right upon the shore; but streams are not frequent, nor of long duration.

The usual general current along the south side of the island, runs in June and November, from 2 to 3 $\frac{1}{2}$ miles an hour. The current on the NE. side of the island is seldom or never so strong. In Tuttacareen Bay, in June and November, the current seldom exceeds eight miles a day, off shore. Near Zeloan it sometimes runs faster; but near the main there is seldom any current.

LXXXIV. Of CURRENTS between the COASTS of AFRICA and MALABAR.

In the large track of sea that lies between this Coast and Africa, there is seldom any great current; but in August and September the freshes from the Cambay rivers usually cause a current to the southward, of from eight to thirty miles a day. This is chiefly found to the northward of 17°; near the land it gradually diminishes till December, during which month, and the two following, there is little, and often no current. In March the almost northerly winds cause a small stream to the southward, of from eight to thirteen miles

miles a day ; but this is not constant. Ships going westward find a constant current to SE. and SSE. during the months of February, March, and April, of from twelve to thirty miles a day : they meet with it from 23 to 40 leagues off the shore ; and before they have passed it, they must be from 100 to 140 leagues westward of Cochin.

The rivers of Sindy, &c. co-operating with the NE monsoon, cause a current to the WSW. and SW. along the Coasts of Guadel, Arabia and Africa, to Cape Basses ; from September to February, of from eight to thirty miles a day. In March the opposite current begins, and runs with much the same force ; but neither is constant, for a current has been found off Cape Rosalgat, early in January, of thirty miles to the northward in a day, though the wind at the same time blew very hard at NW.

LXXXV. *Of the CURRENTS in the PERSIAN GULF.*

The current that happens in the outward Gulf of Persia, between Cape Rosalgat and Cape Jasques, is fluctuating, and not frequent ; and along the shores, in the inner gulf, there are pretty regular tides. A current runs often in the middle of the gulf, and sometimes, though rarely, along the shore. That in the middle is generally down, as those near the shores run usually up the gulf. Neither are very strong (from 8 to 20 miles in a day) nor of long continuance ; and the times they prevail are uncertain.

LXXXVI. *Of CURRENTS in the RED SEA.*

The shores of the Red Sea have some tides ; but they are not half so strong, constant, nor regular, as those in the Persian Gulf. The currents are usually near the middle of the sea, and run from ten to twenty miles a day ; this is chiefly true below Mocha ; for between Mocha and Judda the current often runs to the northward in June, when the northerly winds blow strongest ; and there is a strong current, at the same time, running southward, off Babel-Mandel.

A Description of the East Coast of Africa, from the Equinoctial to the Straits of Babel-Mandel.

LXXXVII. *Of the RIVER Dos FUGOS.*

From the river Dos Fugos, situate under the equinoctial line, to Cape Basses, the coast inclines to NEbE. The islands of Brava, situated under 12°
L of

of north latitude, to the NE. of a cape that projects a little from the land. The northernmost of these islands has, at the NE. point, a sandy bay. The SW. point is higher than the rest of the island, which may be of about $1\frac{1}{2}$ league extent, NE. and SW. The soil of these islands is dry and barren, as is the whole coast: there is no other particular mark for this coast, which may be seen eight or nine leagues at sea. It is unknown what soundings are off it; the Memoirs we have of this part making no mention of any.

LXXXIX. *Of CAPE BASSES.*

The latitude of Cape Basses is $4^{\circ} 45'$ north. It is so called from a reef that furrounds it, and projects about $\frac{1}{2}$ a league. This cape is only known by the different form of the coast, which from NEbE. stretches to the NNE. as far as $9^{\circ} 50'$ N. as appears by the journals of the ships *le Royal Philippe*, *l'Union*, and *le Mer*). This coast is of a middling height, and may be seen nine or ten leagues off. Its soil is sandy, dry and barren. There is nothing farther remarkable. In coasting this part are seen several bights, or bays, concerning which we have no account. There are soundings in 20 or 30 fathoms, 3 or 4 leagues off shore. It is best to sail along this coast in the day time, it being unsafe to approach it at night; on the contrary, it is necessary to steer a quarter of a point wide of it.

XC. *Of CAPE DAL GADA, or DE LA GOADA.*

Cape dal Gada, or Cape de la Goada, is in latitude $10^{\circ} 7'$ N. by Hadley's quadrant; 4 leagues to the southward of which is another point; and the land which lies between these two, may be perceived 12 leagues. It is very even at top, steep, and has white spots along the sea side. The chief mark to distinguish the cape, in coming from the southward, is, that the coast seems to disappear, and forms a large bight, or bay, to enter which care must be used, not only because it is unknown, but on account of the S. easterly winds, which render it very difficult to sail out again. The bottom of the bay cannot be seen in passing by.

XCI. *Of CAPE DORFUI.*

Being off Cape dal Gada 3 or 4 leagues, Cape Dorfui may be seen, bearing NEbE. This is the most eastwardly land of all Africa. Coming from the southward, it appears like an island, sloped to seaward. To the westward of this is a mountain, like a barn, which is joined thereto: by low ground,
this

this is the reason that at a distance they appear separated. The land to the northward of Cape Dorfui cannot be perceived, till the Cape bears NNW. The cape is very high and steep; its latitude is $10^{\circ} 20' N$.

XCII. *Of CAPE GUARDAFUI.*

From Cape Dorfui to that of Guardafui, the course is N. westerly 21° , and distance 30 leagues. Between the two, and close within cape Dorfui, is a great bight: thence the coast runs NNE. as far as Cape Guardafui. These lands are very high, and the beach very steep, whitish, and rugged at the top: they appear so to within a league to the southward of Cape Guardafui; whence this extremity, as it descends, seems to form several steps. The cape itself is low land, yet almost steep to. Its latitude, on comparing many observations, is found to be about $11^{\circ} 45' N$. This coast is very bold, having soundings a mile from the shore.

XCIII. *Of CAPE or MOUNT FELIX.*

From Cape Guardafui to Cape Felix, or Mount Felix, the course is WbN. northerly, distance 14 or 15 leagues. The coast continues high and steep for 8 or 9 leagues; the rest as far as Mount Felix, is a barren plain, and uneven along the sea side; but within land are high mountains. This coast is without danger: nevertheless, if it be night, steer a little wide of the two capes, on account of a point of land that jets out between them. The variation here was $10\frac{1}{2}$ degrees westerly in 1746.

Mount Felix is a high and steep cliff upon the low land, which occasions it to be taken for an island, in coming from the eastward. In fine weather it may be seen 15 or 16 leagues. By several accurate observations, the latitude of Mount Felix is $11^{\circ} 53' N$.

XCIV. *Of CAPE ST. PETER.*

Having passed Mount Felix, you may see the low land continue along the sea side, for about 5 leagues, and incline to the S. westward; thence the land is very high for 5 or 6 leagues, and terminates in a plain of a middling height, which lies WbS. about 2 leagues. From the west end of this plain to Cape St. Peter, is reckoned 6 leagues. This last coast is high, and bordered with rugged mountains. The extremity of this chain of mountains is what is called Cape St. Peter. About two leagues from this cape, is seen by the sea side a white spot, looking like a small sandy bay. Mount Felix and Cape St. Peter lie ENE. and WSW. distance 16 or 17 leagues.

XCV. *Of the ISLAND METTE.*

From St. Peter's Cape to the island Mette, the course is WbS. about 21 leagues: the Coast between them forms a bight, where the shore is of a middling height, and very uneven, but within land are high mountains.

About 3 leagues to the eastward of the island Mette, is a peninsula of middling height, covered with hillocks, which appear separate. Between the peninsula and the island there is a bight, the sea coast of which is not high; but within land is a chain of lofty mountains. The Island Mette, next this peninsula, is of a middling height, and is covered with hillocks, the highest of which, in the middle of the island, resembles at the top the form of a hat, or rather a Dutchman's cap. The inland part of this island, and of the whole coast, is extremely dry and barren.

XCVI. *Of BURNT or WHITE ISLAND.*

From the island Mette to White Island, the course is nearly west 18 or 19 leagues. The main land between the two, is moderately high. This island is no more than a high rock, which may be seen 10 leagues. The dung of the birds which cover it, makes it look white. Some navigators call it Burnt Island; but it is called by the English, Bird Island. It is about 3 leagues from the Continent, in lat. $11^{\circ} 22' N$. When it bears SW. it appears very round, and encompassed with other little rocks; but when it bears south, it seems to extend $\frac{1}{2}$ of a league E. and W.

From Burnt Island the coast continues to the westward, and is very mountainous within land. But, as this coast is seldom frequented, no better account can be given of it; for the ships generally leave the Ethiopian Coast, when they are got as far as Burnt Island, and stretch over to that of Arabia.

XCVII. *Of CAPE ADEN.*

Cape Aden, in coming from the westward, looks like a high island, scragged at the top; and, upon a nearer approach, resembles two islands. The low land of the bay, which lies to the northward, and can only be seen upon a near view, occasions this appearance. When this Cape bears NE. it appears like a rugged mountain, its southern extremity is lower than the northern. Its latitude is $12^{\circ} 40' N$.

To the NW of this Cape there is a mountain about the same height, equally rugged, high on the SE. side, and low on the NW. and between the two are little hills resembling rocks, which being on low land, imperceptible at the distance of eight or nine leagues, appear separate.

XCVIII.

XCVIII. Of CAPE ST. ANTHONY.

From Cape Aden to the low point of Cape St. Anthony, the course is WbS. 19 leagues; the land between the two is low to seaward, with here and there some downs of sand, till within about 6 leagues of this point, where it rises; being formed by a high mountain, which winds a little to the westward, and then stretches away in-land. This ridge (before you raise the low land) makes the cape appear high, coming from the southward.

If, by contrary winds, you are obliged to turn along this coast, come no nearer than 13, nor sail above 30 fathoms from it, on account of sand and coral rocks, that you may \leftrightarrow in case of a calm: otherwise you may be exposed to the violence of the tide, which sometimes runs very strong, and be thereby driven upon the Abyssine Coast, towards the Gulf of Zela, where you will be in danger of being lost.

There is a small shoal off the low point of Cape St. Anthony, but it doth not run far out; so, by keeping in the above depth, there is nothing to fear.

XCIX. Of CAPE BABEL-MANDEL.

From the low point of Cape St. Anthony to Cape Babel-Mandel, the course is WbN. northerly 15 or 16 leagues. Between them the land is low along shore, forming a deep bay. This makes the cape appear separate; and the ridge of mountains above mentioned extends to the NW. till about 5 or 6 leagues from Cape Babel-Mandel, where they terminate of a moderate height, like a gunner's quoin, rising gradually from north to south; the peaked part to the northward, and blunted a little more northerly.

In foggy weather, or otherwise, care must be taken to avoid entering this bay, as several ships have been lost there, thinking to sail into the Straits, and mistaking (for want of experience) Cape Babel-Mandel for the island of the same name. Nevertheless it is easy to avoid this mistake; the cape making as above described, and the island being low and smooth: the two extremities of it descend alike from the middle, like Penguin Isle near Cape Good Hope.

C. Of BABEL-MANDEL STRAIT.

Between the island and the cape is the Little Strait, so called to distinguish it from that to the southward. This strait is four miles broad. There is no danger, observing to keep rather nearer the island than the cape; in irregular soundings,

foundings, from 20 to 10, 14 and 9 fathoms, coarse sand, and now and then 7 fathoms, upon a small bank, but no danger.

Having passed this strait, if there is not time enough to get to Mocha by day-light, it is better to \rightarrow , than run the hazard of overshooting it. In this case you must shut up the strait, and \rightarrow a little to the northward of Cape Babel-Mandel, where the water is always very smooth. If you \rightarrow with the mouth of the strait open, you stand a chance of losing your cables and \rightarrow , as many ships have done.

Either entering or coming out of the Red Sea, it is better to pass through this strait than that to the southward of Babel-Mandel island; because in a calm you are there exposed to the currents; and there is no \rightarrow ground but near the island.

CL. Of MOCHA ROAD.

From the entrance of the Straits of Babel-Mandel; to Mocha road, the course is NNW. 13 or 14 leagues. The land is low along the sea-side, but within land are high mountains. Keep about $1\frac{1}{2}$ or 2 leagues off shore, in 9, 10 or 12 fathoms water. On the beach you may perceive a little sandhill; it is somewhat nearer to Mocha than Cape Babel-Mandel.

The approach to the town is known by the date-trees, which extend about 2 leagues to the southward, along the sea-side. These are the only trees to be seen along this coast, which is very barren. When you are hereabout come no nearer than 13 fathoms, in order to avoid a bank, that encompasses the road on the south side, on which there are but 2 fathoms. This bank is so much the more dangerous, as it is steep to; for, from 10 fathoms, you suddenly have 3 or 2. Then keep in this depth till you bring the spire of the great mosque to bear SSE. when you may haul in for the road, and \rightarrow in what depth you think proper. You have a good birth with the following bearings; namely, The north fort SEbE. The south fort SbE. The great mosque ESE. off shore three or four miles.

Of the Coasts of Arabia and Persia.

CII. *Of the WINDS and CURRENTS near the COASTS of ARABIA and PERSIA.*

It is necessary to inform navigators, that from the beginning of April to the end of August, the winds blow upon this coast from SW. to SSW. varying to the west, in hard squalls, and sometimes accompanied with rain. Therefore, during

during this part of the year, working to windward along this coast is impracticable: for there is no port to shelter you from the storms; and, in many places, no soundings further than 2 leagues off shore. But, though it may be impracticable to gain a passage, after the SW. winds are set in, by keeping on the Arabian coast, (or even out in the middle of the straits, where the currents then set strong to the eastward) yet it may be obtained by keeping the African shore on board, as much as possible, till past the meridian of Aden, and then stretching over for the Coast of Arabia. In September the winds blow a little fresh from the east, with strong currents to the westward, and continue so to the end of March, with frequent land and sea breezes, which blow very faint from the westward, but very fresh from the eastward.

Hence it is that the ships that sail from Mocha toward the end of August or later, bound to the eastward, should avoid this coast, and keep more southerly, in order to take the advantage of the WSW. winds, that blow there till the middle of September. Many ships have lost their passage for want of attention to this observation.

CIII. *Of MACULLA BAY.*

The Bay of Maculla is about 3 leagues deep and 6 wide. The land is very high. On the NE. point is one mountain, somewhat higher than the rest, under which is the road, which serves for shelter from the winds blowing from ENE. to NW. Here is safe anchorage, a cable's length from a little rocky point, where all the danger is in sight. NW. three cables length from this point, there lies a reef of rocks under water, upon which the sea sometimes breaks. The marks for \rightarrow here are the eastern point of the bay SE. one league, and the westernmost point SW. in 3 $\frac{1}{2}$ fathoms.

For the rest of the bay, you may \rightarrow in 15 or 16 fathoms, at 1 league off shore. In the bottom of this bay is the little town of Foa; and on the point, some fishermen's huts. Fish here are plenty and good; but water and other provisions are scarce, and very dear.

CIV. *Of SHAHAR POINT.*

From Maculla bay to the point of Shahar the course is ENE. 12 or 13 leagues. There are many villages seen along this coast, whose inhabitants are not very sociable. From the eastern point of Maculla, you may coast it in 9 fathom, or nearer on occasion.

Shahar appears a fine town, situate by the sea side, and may be seen 5 or 6 leagues at sea, resembling several white cliffs: it is known by two hills, one

to the northward, and the other to the southward. The inhabitants are civilized; that is to say, they can behave well for their own interest, and with good looking after. They have a king, who gives a kind reception to strangers. The marks for \rightarrow are, the northernmost hill NEbN. and the westernmost hill, west by the compass; in 9 fathoms, sand and ouze. The variation, according to the English Pilot, was 14 or 15 degrees in the year 1709, and in 1746 about 11 degrees.

CV. *Of CAPE BOCCOUAS-HOVA or BOGATHSUA.*

From Shahar to Cape Boccouas-Hova, or Bogathsua, the course is east 15 or 16 leagues, a clear bottom, without any danger. The coast is pretty high. There are from 50 to 60 fathoms, 2 leagues off shore. One league from the cape there are but twelve fathoms; and, as you approach, it shoals gradually.

CVI. *Of KISSEN or KAISUN POINT and CAPE FORTUACK.*

From Cape Boccouas-Hova to Kissen Point, the course is ENE;N. 31 or 32 leagues. The inland part between them is high, and may be seen at least 10 leagues; but the coast is low. Here are seen many villages. All this coast is very safe, having from 30 to 40 fathom, $1\frac{1}{2}$ or 2 leagues off shore. Kissen Point is high land, which may be seen 10 leagues at sea, and is remarkable by two peaks, that make like asses ears, when they bear EbN. and ENE. and when they bear NbW. you may see the two little towns of Kissen and Durja. Their roads are to NW. in what depth you think proper.

From Kissen Point to Cape Fortuack, the course is NEbE. E. 21 or 22 leagues. The coast between them is low to seaward, and high within land: there are seen some villages. The soundings here run farther out; for 2 leagues off you find 37 fathoms, which shoals gradually sailing nearer shore. But at Cape Fortuack, there are 40 or 50 fathoms within half a league.

This cape is very high, and may be seen 20 leagues at sea. To the northward of it, the coast forms a large bay, which hath good soundings, and holding ground. There is no great depth to be found but about the cape. You may \rightarrow , in this bay, in what depth you will; but when you have passed it, you meet (as in many other parts of the Coast of Arabia, where the shore is high and steep) with no convenient depth for \rightarrow .

CVII. *Of CAPES DOFFAR and MORIBAT.*

From Cape Fortuack to Doffar, the course is NEbE;E. Opinions differ about the distance: the English Pilot makes it but 48 leagues, others 54. Those

Those who make this track ought to take notice of the difference. Three or 4 leagues before you come to it, you perceive high champain land. Doffar is a little town surrounded with trees; its road is quite strait. They \rightarrow a mile off shore, in 5 or 6 fathoms, the highest house in the town ENE. Here is the best ground in the road.

It is reckoned 8 leagues from Doffar to Moribat, where most ships abide, that lose their passage. It is said, that this road is exceeding good, during the easterly monsoons: however, this may be uncertain.

The tides are very irregular along this coast; they rise at certain times 7 or 8 feet. The currents commonly set with the wind, except at the new and full moons: then they run for 3 or 4 days very strong to the windward. This change is of great service to those who lose their passage.

Many navigators, who are not acquainted with this accidental difference of the winds and currents, are fearful of sailing near the shore. This must and may be done without danger; for the winds seldom blow strong on the shore, during the easterly monsoons.

There are many places upon this coast where the inhabitants are not to be trusted, as at Shahar, Kissen, and above all at Doffar, where the Christians are not all beloved; and consequently are not real friends, whatever they may pretend.

CVIII. *Of the ISLAND SOCCATRA.*

The body of the island Soccatra is in latitude $12^{\circ} 45' N$. The easternmost point is 5 leagues distance from Cape Gardafui. It is about 25 or 26 leagues from east to west, and 10 from north to south; the land is mountainous. When the easternmost point of high land bears either N. or S. it makes not unlike a dolphin's nose; and from thence the land trenches away to the eastward, for about three miles, till it terminates in a low point, from which a ledge of rocks, even with the water, runs out to the S. eastward, about a league. There are two \rightarrow places: that for the easterly monsoon is at the WSW. part of the island, opposite one of its coasts, which extends about 10 leagues SE. and NW.

To sail to this \rightarrow , if you are to the eastward of the island, coast along shore in 20 fathoms, as far as the WSW. point of the island, which is high and bluff. By keeping that depth, the bottom is sandy, but in 15 fathoms there are rocks; so that there is no \rightarrow there, in case of a calm, without the hazard of losing your \rightarrow . Having passed this high point, keep in from 15

to 25 fathoms; and when you are opposite a high round hill, in the middle of this part of the coast, near which there is another smaller, split in the middle; and when this last bears north, you may \rightarrow in 18 fathoms, sandy ground.

Here refreshments may be had, but the water is a little unpalatable. There is better to be had in some places thereabout, but with great difficulty.

The Bay of Tamrida, on the north side, where the viceroy resides, is the most convenient place in the island for refreshment and plenty of provisions; but the \rightarrow there is not good, being too near shore. That place is known by a point of sand, which makes the eastern side of the bay. After you have doubled it, you may perceive the town, opposite to which you may \rightarrow half a league from the shore, in 10 fathoms, sand and coral. The water is very good, and provisions cheap.

On the north coast, coming from the eastward, as you sail towards Tamrida bay, you may observe two white sand-hills, the westernmost of which is much the largest: the town lies about four miles to the westward thereof, under the highest and scraggiest part of the land. You may \rightarrow about two miles off shore, in 9 or ten 10 fathoms, the town bearing S. or SbW.

Of the Coast of Arabia from Curia Muria to Cape Rosalgat.

CIX. Of the COAST of ARABIA.

The bearing of the Coast of Arabia, from the Bay of Curia Muria to Cape Rosalgat, is NEbN. distance 115 leagues. It is full of rocks and dangers, which are but little known. Besides, it is not safe to approach it, because of the currents all along, which may set you on it, should you be taken in a calm. The ships bound for Persia, which commonly make Cape Rosalgat, should not keep more than 15 or 16 leagues to the southward of this cape. Along this coast there are soundings about 3 leagues off shore.

CX. Of CAPE ROSALGAT.

Cape Rosalgat is the easternmost point of the Coast of Arabia: its latitude, according to several observations made at sea, is $22^{\circ} 12'$ N. longitude $59^{\circ} 55'$ E. of London. Its extremity is low, but within land are exceeding high mountains, seen 20 leagues off at sea.

CXI.

CXI. Of CAPE MASKATTA or MUSKAT.

From Cape Rosalgat to Mascatta or Muskat, the coast stretches to the NW. 26 or 27 leagues. Between the two are seen some sandy bays; but so shoal, that there is no \rightarrow , except at Teywee or Tagwell, and Cutiat; and there it is within pistol-shot of the shore. You must keep this shore on board, in the months of April, May and June, if you would arrive at Muskat, or enter the Persian gulf. Muskat is in the latitude of $23^{\circ} 25' N$. The town is encompassed with a good wall, and the port big enough to contain fifty or sixty sail of ships. There are no soundings a mile off shore.

The rest of the coast from Muskat to Cape Mozandon or Mosenden, is bordered with islands and several dangers.

*Of the Coast of Persia.***CXII. Of CAPE JASQUES or JAMES.**

The course, from Muskat to Cape Jasques or James, is NNW. distance about 54 leagues. The easternmost point of this cape forms the entrance of the Persian gulf, and is, according to the generality of navigators, in latitude $25^{\circ} 50'$ north. This point is very low, and upon it there is a white square cliff, like a monument, standing in the sea; but it cannot be seen, when you are in the road. In Jasques Road, the bottom is sand; except very near the shore, or at the eastern point. To the northward of this point there is a little river, where vessels of about 10 feet draught may ride very secure. Within this river you have $4\frac{1}{2}$ fathoms at low water; when on the bar there are but five feet, which encreases with the flood to seven or eight feet.

CXIII. Of CAPE GUADEL or GOADEL.

Cape Guadel is of a moderate height, lying in the latitude of $25^{\circ} 25' N$. and bearing from Cape Jasques EbS. The English Pilot makes the latitude of Cape Jasques $25^{\circ} 30' N$. and that of Cape Guadel 10' more northerly; but this will not agree with the bearings, which he makes, with the variation allowed, WbN. and EbS. The latitude of Cape Jasques is exactly $25^{\circ} 50' N$ and Cape Guadel 25 more southerly; but the navigators should be upon their guard. The distance per medium of various accounts, is fixed in the new charts at 90 leagues.

As to a particular description of the coast, none of the journals or directories make any farther mention than to avoid coming too near it in the night; because the land near the shore is very low and not to be seen far off, though it is high land up the country. There are no soundings, but very near the shore.

CXIV. *Of SANDY RIVER.*

The land to the southward of the mouth of this river, is called by the natives Divelle, or seven months: it shews very low, and three or four miles off the shore there is not above 4 or 5 fathoms water, hard ground, being a sort of coral. The river Sindy, (Sinda or Cinda) hath a bar at the entrance, of about 13 or 14 feet at high water. The mark for coming in is a white monument, which will shew itself about four miles off. The river Sindy would be very hard to be found, were it not for this monument, which is always kept white, to serve as a mark. Bring this monument to bear NE. from you, and steer directly with it, till you come to the foot of the bar, where, on occasion, you may \rightarrow in 3 or $3\frac{1}{2}$ fathoms; and then the aforesaid monument being brought NE. E. you may go over the best of the bar, steering NE. E. The bar going into the river is narrow, and has not above $2\frac{1}{2}$ fathom at spring tides. But as there can be no dependence on instructions for passing the bars of great rivers, because the banks generally shift their places every year or two, therefore I would advise the procuring a pilot of the place.

The first place of any note, after passing the bar, is Laribunda, about 5 or 6 leagues from the sea; but the principal place of trade is Tatta, about 40 miles distance from Laribunda.

CXV. *Of the COAST of GUZURAT.*

The Coast of Guzurat, from Giant's Point to that of the west end of Diu, lies SE. and NW. 45 leagues. The shore is of a moderate height, but it is very mountainous up in the country. There are soundings of 36 fathoms, sand and shells, about 7 or 8 leagues off shore.

CXVI. *Of DIU and POINT COUREA.*

Diu lies in $20^{\circ} 45' N$. The harbour between the island and the continent is very commodious, but the entrance is narrow and difficult. This city has been of great note, and the capital of Guzurat; but now it is, in a manner, only a heap of ruins.

From

From the east point of Diu to Point Courba, the course stretches NEbE. distance 19 leagues. It is very mountainous, inland; and the coast of a moderate height. From this point there runs out a reef of rocks, both above and under water, jutting out above 2 leagues, which must be carefully avoided.

When you have doubled the reef off Point Courba, your course to the island Peram is NbE. 11 or 12 leagues. Come no nearer this coast than 11 or 12 fathoms (this you have about 3 leagues off shore) on account of the shelves which encompass it.

CXVII. *Of PERAM ISLE and GOGO.*

Peram island is surrounded with rocks. If you are bound to Gogo, which lies NNW. of this island, you must bring it to bear west, about 1 league; and from thence steer NW. into the road which is deep enough for large ships, it having 4 fathoms a league off shore. It is very secure at all times; for the island, and the shoals which appear at low water, break the waves, and keep them off. The tides here are very strong, especially the springs, when it is high water at four o'clock.

Gogo lies in $21^{\circ} 45' N.$ it is the only place for trade on this coast: notwithstanding what is here said of it, those who would go there, or to any other part of the gulf, should take a pilot, because this navigation is both difficult and dangerous.

Of the Coast from Point de Gall, or Gaula, on the Island Zeloan, to Surat.

CXVIII. *Of POINT DE GALL, or GAULA.*

Point Gaula is placed, in the new charts, in $6^{\circ} N.$ according to several observations agreeing with each other, with as much exactness as can be wished. The longitude is $80^{\circ} 15' E.$ of London, as adjusted by that of Cape Comorin, and that of Pondicherry.

In comparing the reckonings of ships, whether sailing from Cape Comorin to Point Gaula, or returning from Point Gaula to this cape, their bearings are found to be $SE\frac{1}{2}E.$ and $NW\frac{1}{2}W.$ distance 68 leagues. Mr. Nichelson makes $W 33^{\circ} N.$ 65 or 66 leagues from Point Gaula to Cape Comorin.

CXIX.

CXIX. Of WINDS and CURRENTS near POINT DE GALL.

If you should be becalmed in coasting along Zeloan, \leftrightarrow in 30 fathoms, lest you be carried off the coast by the currents. In crossing from one to the other, observe, that (during the easterly monsoons) the currents about Point Gaula set WSW. and athwart the Gulf of Manara, to the SW. so that several ships have been driven unexpectedly upon the Maldivia islands. To avoid this, be careful to coast the Island Zeloan, nearly as far as Colombo; from whence you may safely cross to Cape Comorin; but if you should make the land to the eastward of the cape avoid coming near the coast; for it is encompassed with dangers.

In the westerly monsoons, you must (contrary to what has been said) take care of the currents, which set with great rapidity into the Gulf of Manara, whereby many ships have been horsed to the northward of Negumbo, and with great difficulty got out of the gulf again. For want of this precaution a ship may be ashore in the night-time, when you reckon her 15 or perhaps 20 leagues distant. The skilful navigator, either way, will be upon his guard.

CXX. Of CAPE COMORIN and POINT CADIAPATAM.

Cape Comorin lies in between $7^{\circ} 56'$ N. and $77^{\circ} 37'$ East longitude, from London. The latter was determined by the bearings of the Coast of Malabar, from Cochien to this cape. Its extremity is low, and, covered with trees. To the northward rises a little hill, which appears like an island, when it bears east. The chart represents two different views of this cape; one as it appears from the west, the other from the east. Some Directories take notice of two rocks, 2 leagues SW of Cape Comorin. There was also a rock, even with the water's edge, seen by Mr. Nichelson, (on board his Majesty's ship Elizabeth, in the year 1759 :) it lies in about the latitude of $7^{\circ} 43'$ N. and bears nearly SW. from the little hill, to the northward of Cape Comorin, distance about 7 leagues: there are two to the SE. but they are not above a league off shore.

From Cape Comorin to the Point of Cadiapatam, the course is WNW. westerly, 6 leagues. This remark is taken from a draught and directions made upon the spot, which were communicated by the governor of Pondicherry, and commander in chief of the French settlements in the East Indies. Between the two, but nearer to the cape, is the river Manacoudy, whose entrance is encompassed with rocks. Point Cadiapatam forms the eastern extremity of Colecha bay or road, which lies between two leagues to the NW. Several great trees are seen on the extremity of it.

About

About $\frac{1}{2}$ of a league to the SSW. of this point there are two little islands, surrounded with rocks; to the SW. of which, about half a league, according to some, and $2\frac{1}{2}$ leagues according to others, there is a rock almost even with the water, the top of which appears like a buoy.

Those who sail near the coast ought to be the more careful to avoid it, as it seldom breaks. The \rightarrow age of Colecha is in 14 fathoms, about half a league to the westward of the westernmost of the above-mentioned islands.

CXXI. *Of the ISLAND ENCIAM, the RIVER TENGAYAPATNAM and POINT VENIAM.*

It is reckoned 8 leagues WNW. from Point Cadiapatam to Point Veniam. Half way between the two lies a little island called Enciam, quite close to the Continent, upon which a church is built. To the eastward of this island there are several rocks, above and under water; and to the northward of these rocks is the river Tengayapatnam, or Tegapatam, which runs a great way in the land. In the rainy seasons long-boats may enter; but in dry weather there is a bar at its mouth, which shuts up the entrance of it to all but small craft; though within the bar this river is very navigable.

At $2\frac{1}{2}$ or 3 leagues from the river Tengayapatnam, is seen a large wood; at the west end of which begins high red land, intermixed with white, and very steep to the seaward. These high lands continue a league beyond Point Veniam, which forms a bluff of the same lands. This point is known by the coast stretching from thence to the NNW. The village of Veniam, and the river of the same name, are 1 league NbW. off this Point. Here the red land ends.

From Cape Comorin are seen a number of churches along the sea side. The coast is of an height to be seen 8 or 9 leagues at sea; besides a chain of high mountains, that are seen inland, and extend above 150 leagues northward. These are called by Geographers the Mountains of Gatta. It is not like the same coast from the river Veniam to Anjanga, it being low to seaward, and only discovered by trees upon it.

A rock is supposed to be 14 leagues to the W. by N. of Point Veniam. The English Pilot lays it down in latitude $8^{\circ} 10' N.$ whereas, in our new charts, it is placed in $8^{\circ} 17' N.$ The meridian distance in both, about 6 or 7 minutes E. of Cochien.

CXXII. *Of WINDS on the COASTS of MALABAR, CANARA, &c.*

It is proper to observe, that from the month of April to October, the winds blow there from NW. to SW. with storms, tempests and much rain : therefore there is no navigating without much trouble near this coast, during this monsoon, particularly in June and July.

The season growing a little finer in August, the ships that have wintered there depart thence for the Coast of Coromandel, and other parts eastward. After the full moon in October you may sail in this part very safely ; the winds then blowing out at sea, from NNE. without storms ; and along the coast, so favourably, that every day, about eleven or twelve o'clock, they come from the sea, and at midnight from the land. This regularity facilitates the navigation of those ships who would sail up or down the coast ; which you must always do pretty near, in order to take the advantage of one breeze or the other.

If you find yourself near land, before the wind blows from thence, come to in the mean time with a small \rightarrow , so as not to steer a disadvantageous course. If you are sufficiently distant from it, you should \rightarrow , and wait for a breeze, in order to recover the coast. Above all, great regard must be had to the tides, which, during the calm that intervenes the change of wind, may (in a little time) make you lose the advantage you have gained. Often with a little wind you think you get, when in fact you lose : this may be perceived, being near shore.

In the day-time you may make some observation by the land ; but in the night, it is necessary to have recourse to the lead to know by ; or, let the long-boat \rightarrow near you : this may serve for a comparison, whereby you will know whether the current is favourable, or contrary. If the latter, it is best to \rightarrow , and stay till it is diminished or changed. This instruction may be useful to those navigators who are not experienced, as it may serve to make them avoid the errors that generally prolong their voyages.

CXXIII. *Of ANJANGA, COISLAN and COCHIEN.*

From Veniam Point to Anjanga, the course is NbW 6 $\frac{1}{2}$ leagues. The coast is low and woody ; and you have soundings in 23 or 24 fathoms, 1 $\frac{1}{2}$ league off shore. Anjanga is an English town ; the fort is square, defended by bastions, and there are several houses that make it a very pretty place. There is a river about 100 paces from the fort ; but it is not very considerable.

The

The latitude of Anjanga has been observed $8^{\circ} 30' N$. The anchorage is to the SW. of the fort, in 12 fathoms, at two miles off shore.

From Anjanga to Coislan or Quilone, which is a Dutch factory, the coast lies NNW $\frac{1}{2}$ W. $6\frac{1}{2}$ leagues. The land is low to sea-ward, except 2 leagues to the northward of Anjanga, where there is a red beach, steep at the sea side; then the coast continues low as far as Coislan. Two leagues SSE. of this last place, is a little river. You have soundings, $1\frac{1}{2}$ league off shore, from 15 to 24 fathoms, muddy sand.

Coislan is known by its flag, and the several tall trees that appear above the fort, which is encompassed with high white walls. The road is opposite the fort. Before the fort is a reef of rocks, that may be avoided, by coming no nearer the shore than 12 fathoms.

From Coislan to Calicoulan, or Carnople, another Dutch factory, in latitude $9^{\circ} N$. it is $5\frac{1}{2}$ leagues. On this coast you steer NWbN. and NNW. coming no nearer it than the depth above mentioned.

It is reckoned 21 leagues NNW $\frac{1}{2}$ W. from Calicoulan to Cochien. The land between them is low, and woody along shore. You may coast it in 7 fathoms, sand and mud. If you turn it, stand off no further than 24 fathoms, nor nearer than the depth above mentioned.

Coming from the southward, the town of Cochien can scarcely be seen; the trees almost hiding it. You only perceive some houses and the flag, which is hoisted upon a tower. This town is the chief settlement belonging to the Dutch, upon the Coast of Malabar. It is encompassed with a good brick wall, fortified with bastions. The river, at the mouth of which it is situate, is very deep within the bar. They build ships there from 200 to 300 tons. This river may be considered as an arm of the sea, forming many little islands along the coast. This entrance is between two reefs, that extend themselves along the coast north and south, and project $\frac{1}{2}$ of a league into the sea.

If you would go to the town, in a boat or canoe; to know the right channel, steer towards the starboard point going in; and when you are near the shoals, turn short to the larboard, and go between the two reefs. When you are near shore, and have doubled the starboard point, steer by one of the gates of the town, where there is a pier to land on. The best anchorage in the road, in the easterly monsoons, is in 5 or 6 fathoms, with the flag-staff ENE.

There is a little bank before the entrance of the river, on which is 4 fathom, hard ground; but you run no hazard by ~~4~~ing in the depth already shewn, where the bottom is ouze, and very good holding. The town of Cochien is plainly seen, coming from the northward; it appears on that side very distinct. Its latitude is $9^{\circ} 58' N$. and its longitude $76^{\circ} 8' East$ from London.

CXXIV. *Of CRANGANOR, PENIANA, and CALLICUT.*

From Cochien to Cranganor, (another of the Dutch settlements) the coast lies NbW. $8\frac{1}{2}$ leagues. The land is low and swampy along shore, and only perceivable by the trees; but inland exceeding high mountains, making part of those which, as was before observed, extend from Cape Comorin. To the eastward of Cranganor are seen two peaks, on the tops of these hills; which make like the ears of a hare, when you are right off them.

Seven leagues N $\frac{1}{2}$ W. from Cranganor is Peniana, which is a Dutch settlement. To the northward of this place there is a little river, by which the pepper is brought; but there is no passage into it for any but the very small country vessels.

From Peniana to Callicut, the coast extends NNW. 14 leagues. About half-way from one to the other you see Tannore; and $3\frac{1}{2}$ leagues from this last is the entrance of the river Beypour, which is also 3 leagues SSE. of Callicut. The small country vessels go in there. The coast between Peniana and Callicut is all the way woody: when you approach this last, you perceive some little hills, near the sea-side, and at a distance the chain of Gatta mountains. There are also, in several places, little pagados near the shore, which appear white. You may sail along this coast without fear, in 8 fathoms, muddy ground, if you come from the southward, although you are near shore.

The town of Callicut is not quite seen, because it is in a little bay. You see only to the northward three white pyramids, which are called the Tombs: by these it is known. Another mark, equally useful, is a little hill upon the land, detached from the rest, which appears like two breasts, and which, though more southerly than Callicut, appears to the northward of it, coming from the southward.

This town is the capital of the Samorin, and the place of his residence. A considerable trade is carried on here in pepper and cardamums. The English have here a factor, and the French another; each of them hoisting their flag upon their factory. The latitude of this town is $11^{\circ} 18' N$. In the road of Callicut, west of the English factory, lies a rocky bank, upon which you must avoid \rightarrow , lest you lose your \rightarrow there. At a little distance from it there is no danger. Small vessels may \rightarrow between the shore and the bank; but for large ships the best \rightarrow is to bring the French flag to the southward of east, whilst that of the English bears EbN. in $5\frac{1}{2}$ fathoms, muddy ground, two miles off shore. Mr. Nichelson says, when the English flag-staff bears NEbE.

NEbE. about two miles, there is a shoal with $\frac{1}{2}$ less 3 fathom, hard rocky ground, which extends NNW. and SSE. about a large $\frac{1}{4}$ of a mile, and its breadth little more than two ships length; and has 5 fathom just without it.

It is reckoned about 10 leagues NWbN. from Callicut road to that of Mahe. The Sacrifice Rock lies about 4 leagues SbE. or rather SbW. according to some, from the latter and about $6\frac{1}{2}$ leagues NWbW. from the former. This island or rock, is all white, covered with the dung of birds, high and very steep on all sides, and about 2 leagues from the Continent. The passage between them is very good, having no less than 8 fathoms in the middle channel. About one-eighth of a league without this rock you have 15 or 16 fathoms, and to the ENE. is the river Cotta, in which the pepper trade is carried on. The coast between Callicut and Mahe is low and very woody, with several little rivers, and Indian villages, the principal of which is called Chambaye, about a league SSE. from Mahe; it belongs to the prince of Bayanor. Near this river are seen several rocks along shore.

CXXV. Of MAHE, MOELAN and TILLICHERRY.

Mahe is the chief settlement belonging to the French, on the Coast of Malabar, of which they have been in possession ever since 1725. This place, with all its dependencies on the Malabar coast, was surrendered to the English on the 10th of February 1761. They have built there a town and several forts, which really make a very strong place. The principal fort is situate on a bluff point, at the mouth of a little river, that takes its rise a great way within land. It is navigable, for the little vessels of the place, a great way up; by means whereof they easily convey the pepper and cardimums, in which is carried on at this place a very considerable trade; but there is a bank of sand or bar that shuts up the entrance, at high water; and there is but seven or eight feet depth: this prevents middling ships from entering. On the other side of this river, on a hill, is built another fort, called Great Calais. The town is on the starboard-side going in, beyond the first fort, They \rightarrow , in the fine seasons, in $5\frac{1}{2}$ fathoms, the flag of the fort EbN. about $\frac{1}{4}$ of a league off the shore. If any accident should oblige you to \rightarrow there before the full moon in October, you must come no nearer than 12 fathom.

About 1 league NNW. from Mahe, upon a little hill, is the fort of Moelan, belonging to the English; and a league more northerly, the town and forts

of Tillicherry, which belong to them also. Here is a small bay, into which runs the river Dermapatam: in passing it you see several great rocks, quite in shore. Tillicherry belonged formerly to the French, who forsook it, and broke up the factory, May the 3d, 1682. Off Tillicherry is an island covered with wood.

CXXVI. *Of CANANOR, MOUNT DILLA, and MANGALOR.*

To the northward of this island, about $3\frac{1}{2}$ leagues you see the Dutch fort at Cananor. It is built on a low ground, covered with trees. The town of the same name is near it, and a little river passes at the foot of it.

Mount Dilla, in latitude $12^{\circ} 3' N.$ bears NW. about 10 leagues from Mahe road. This mount extends E. and W. and forms a point that projects into the sea. As you come from the northward or southward, this mount appears separate from the coast. The neighbouring land being very low, and only distinguishable by the trees, renders this hill and point very remarkable to navigators.

From Mount Dilla to Mangalor, the course is NbW $\frac{1}{2}$ W. distance 16 leagues. Seven miles north of Mount Dilla runs the little river Canople, to the northward of which is Mount Formosa, so called by the Portuguese, from its beautiful appearance. This mountain is reckoned to stand 4 leagues inland. The coast hereabout is low, and covered with wood. Somewhat to the northward of Mount Formosa you see a little hill called Mount Beam or Barn-hill.

Of the Coast of Canara.

CXXVII. *Of ST. MARY'S ISLANDS, and PIGEON ISLAND.*

Mangalor is at the mouth of a great river, wherein the country vessels sail, which do not draw much water, and can go over the bar, which almost shuts up the entrance. Here is a great trade in rice. On the south side is a fortress of the king of Canara, to whom the town and country belong. The Portuguese have a factory here. The \rightarrow is off the river's mouth, in 6 or 8 fathoms, muddy ground.

About 10 or 11 leagues NWbN. from the entrance of the river Mangalor, lies the southernmost of the St. Mary's islands. These are several little islands that lie along the coast north and south, as far off as the river Bacanor or Caleanpour, being about 6 leagues. There is a passage between them and the
Continent;

Continent ; but you must be experienced, in a small vessel, to attempt this passage, on account of divers rocks that lie under water in many places about them. There are also the Permera rocks above water, lying in the latitude of 13° . Come no nearer them in the night than 16 fathoms. In latitude $13^{\circ} 50'$ north, NbW $\frac{1}{2}$ W. 5 leagues from Bacanor, runs the river Barfalar, to the northward of which are two little islands, in shore ; and to the southward, a chain of rocks that extend along the coast.

Nine leagues NW. of the mouth of the river Barfalar, in $14^{\circ} 8'$ north latitude, is Pigeon Island : though it is small, it may be seen 8 or 9 leagues at sea. It lies WSW. of the river Batecala, and $2\frac{1}{2}$ or 3 leagues off shore, where are seen again several little islands. Pigeon Island has a rock, or little island, off it to the SE. and another to the East. Some make these, one SW. the other W.

CXXVIII. *Of CARWAR, and the ISLANDS of ANGEDIVE.*

Fourteen leagues NbW. off Pigeon Island, is Carwar, which belongs to the English. Just by, are the Angedive Islands, on the largest of which the English had a fort.

You may \rightarrow at Carwar, with the Duckey or Oyfter rocks, which lie at the entrance, NNW $\frac{1}{2}$ N. and a small rock in the road, open with the island of Angedive, to the NbW $\frac{1}{2}$ W. distant 2 leagues.

Or you may \rightarrow opposite the island of Angedive, the body of the island NEbE. $\frac{3}{4}$ of a league, and the south point of Carwar NbE. in $10\frac{1}{2}$ fathoms.

The passage into Carwar Bay, is between the Oyfter rocks and the little island, near the south point. In this bay, near the said point, is a small cove, the entrance into which is SE $\frac{1}{2}$ E. Small ships may \rightarrow here in safety, being sheltered from all winds. At the entrance into this cove you have 4 fathom. A ship may ride here during the western monsoons, without much hazard.

There is also a passage on either side the Oyfter rocks, in 7 or eight fathoms, ouzy ground.

Of

*Of the Coast of Decan.***CXXIX. Of CAPE RAMAS, SERPENT ISLANDS, and GOADA, or ALGUADA FORT.**

About $4\frac{1}{2}$ leagues to the northward of the Oyſter rocks, lies Cape Ramas; diſtant $7\frac{1}{2}$ leagues SbE. from the bar of the river Goa. The Cape is high land, and in coming from the ſouthward it appears very bluff. If you would go to Goa, and ſail along ſhore, you muſt ſteer NNW. 2 leagues to the weſtward of the Oyſter rocks, in order to give a good birth to the Serpent iſlands, ſituate 2 leagues WSW. off Mormagan point, which makes the ſouth ſide of Goa river. They ſay there is a paſſage between theſe two Iſlands, and that there are no leſs than 4 fathoms water in the channel, by keeping ſomewhat nearer to the weſternmoſt; nevertheleſs it is more adviſeable to ſail without all. Thoſe who are benighted ought to be upon their guard, becauſe of the currents, which the ebbing and flowing of the river occaſion, and which may alter the direction.

Having doubled the outer Serpent Iſland, you ſteer for Goada, or Alguada Fort. This is built on the north ſide of the entrance of Goa River. You \rightarrow in 8 or 9 fathoms, muddy ground, the mouth of the river Eaſt, and Goada Fort NbE. off Mormagon point. Beware of certain rocks, that are only ſeen at low water. If you would go farther up, you muſt take a pilot of the place.

CXXX. Of GOA and the BURNT ISLANDS.

Goa is the chief ſettlement belonging to the Portugueſe in the Eaſt-Indies, and the reſidence of the viceroy. This place is too well known to need a more particular deſcription here. Its longitude has been obſerved $73^{\circ} 50'$ E from London, and latitude $15^{\circ} 31'$ North.

Ten or 11 leagues NWbN. from the road of Goada, are the ſouthernmoſt and weſternmoſt of the Burnt Iſlands, called by the Engliſh the Vingorla rocks, in number 11. The northernmoſt and largeſt lies in 16° north latitude, and $1\frac{1}{2}$ league WbS. from the river Vingorla. Though the paſſage appears clear between theſe iſlands, and the Continent, it is beſt to ſail wide of them.

Of

*Of the Coast of Concan.*CXXXI. *Of the POINTS of VIGIADOR, and IXDRUC.*

Nine leagues NNW. off the largest of the Burnt Islands, in latitude $16^{\circ} 25'$ N. lies point Vigador: this makes the south point of Ixdruc, Angria's principal port. This is a bluff point, whereon is a fort well lined with guns, and at the foot of it a reef of rocks, even with the water. This port is about $1\frac{1}{2}$ league in depth, to the SSE. and $\frac{1}{4}$ of a league wide. The north point is also surrounded with a reef. Within this harbour you have 12 or 13 feet at low water, and 4 or 5 fathoms depth between the two points that form the entrance.

This account is taken from a particular draught, sent to the French company by a mate belonging to the ship Jupiter, which was taken by these pirates. This place is also called Vizendruke, but is better known by the name of Geriah or Gyria: it was taken from Angria, by Admiral Watson and Colonel (afterward, Lord Clive) on the 13th February 1756.

CXXXII. *Of the ANGRIAN CORSAIRS.*

The ships that sail along the Coast of Canara and Decan, whether bound to Goa, Bombay, or Surat, should be on their guard. The Angrians, Sangarians, and Savejees, are corsairs, and watch continually to surprise ships navigating near this coast. They know how to take advantage of the calms, and to attack with the greatest surety. It is very seldom one alone ventures, without being accompanied with several others. They have generally chase-cannon of twelve or eighteen pounders, and some of less diameter. Most of their ports are situate between Goa and Bombay. Of late years, the English ships, as well as others, are obliged to keep guns to defend themselves.

CXXXIII. *Of GEITAPOUR, or RAJAPOUR.*

Three and a half or 4 leagues to the northward of Ixdruc, is Geitapour, or Rajapour. In 1682 and 83, the French had a settlement there.

Here follow the instructions given by those navigators who have frequented this place.

Coming from the southward, the port of Geitapour is known by a fort, which is 4 leagues distant from it to the SE. which may be plainly seen 2 leagues off. To the NW. lies Cape Geitapour; a steep eminence, upon which are seen several clusters of trees, which may be taken at first sight for windmills.

windmills. A little farther in-land, above this eminence, there is a little round hill, at which you might see, at that time, three great trees appearing all together like a little fort. It was here the French factors formerly hoisted their flag. A little to the northward of the entrance of Geitapour, is seen a steep platform, resembling an island, the soil of which is like iron-mine. Farther northward is a sandy bay, with another platform of the same kind, but lower and quite black. In the middle of the sandy bay you see a reef, very near shore. The coast to the northward is higher than in this place. There is no other platform, nor black ground beside what is here mentioned.

NW. from Cape Geitapour there is a reef, of which take the following remark.

The end of this reef is NW. of the north point of the bay. Half a league without this shoal you have 7 fathoms water, rocky ground. Within it, about a musket-shot, there is a fathom and a half of water, the same bottom; and elsewhere about it 8 fathoms, muddy ground. When you enter the bay of Geitapour, you must in coming from the northward, keep in 10 fathoms, on account of this rock; until you see the bay open; then keep on the south side, and look for the great tree on Mount Gnafil, at the NE. end of the bay, in which you may \rightarrow in 5 fathoms muddy ground.

CXXXIV. *Of the BAR of CHOUL, and COULABA ISLAND.*

From Geitapour, or Rajapour, to Choul bar, the direction of the coast is NNW. distant 44 leagues. Here you meet with many ports, and the mouths of several rivers. Some of these ports belong to the Angrian, some to the Savejee, and others to the Seedee. The Seedee is the vice-admiral of the Mogul's fleet. These ports are none of them of any importance to trade.

When you turn it along this coast, in standing on, come no nearer than 9 or 10 fathoms; because, under that depth, you may find danger in several places.

Choul lies in $18^{\circ} 35'$ N. Latitude. They anchor right off it, in 8 or 9 fathom water.

Three leagues and a half SE from Choul, is a great river, at the entrance of which there is a reef that breaks very much. In the midst is a rock, which appears above water. The English charts call this river or port, Dunda-Rajapour. From thence to Choul, the coast is lined with rocks. The fort of Choul is placed on a little eminence, which may be seen 4 leagues at sea; at the foot of which the town is built. Sailing along the Coast you see several buildings, and within land many rugged mountains.

Mr.

Mr. Nichelson has the entrance of this river 7 leagues NNW;W. The coast between Goa and Choul is most confusedly represented by different authors; owing chiefly to mistaking the names of places one for another. This coast is mostly inhabited by the Angrians, and other piratical princes. Navigators, in common, have seldom chose to come near enough to make distinct remarks of it.

Off Choul is a flat island, named Coulaba, on which the Angrians have a fort. From hence to the opposite shore there are stakes, on which the fishermen hang their nets. In several places these stakes reach two leagues off shore. You must take care, and not pass between them without great necessity.

When you anchor before Choul bar, you may plainly see the Island Hunary and Cunary, which lie 3 or 4 leagues to the southward of Bombay. The coast between these two is filled with aldees, or villages of the Indians.

CXXXV. Of BOMBAY, BACAIM, or BASSEEN, and BARFABAS.

Bombay lies in latitude $19^{\circ} 8' N.$ and $73^{\circ} 6' E.$ longitude from London. It is the finest port in this coast, and the best belonging to the English in the East Indies. Here it is that ships winter and are refitted. The entrance of it is very difficult, on account of the many shoals found there. You must be well experienced to enter it.

From Bombay to Bacaim is 10 or 11 leagues NbW. The shore between the two is low and even, except some hillocks. Within land it shews itself also in hillocks, but higher. You may sail along this coast in 10 or 11 fathoms, free from danger, except the fishing stakes that are found very far out, and within which the passage is not safe. Here is good \rightarrow ground, if becalmed, or the tides are against you. Between Bombay and Bacaim the tides set NbE. and SbW. 3 or 4 leagues off. The floods then set to the NWbN. and the ebb SEbS. as far as Cape St. John. The freshes out of the country make the water very thick.

Before you come to Bacaim, you meet with a river, and a little port called Barfabas; it bears EbS. when the southernmost part of the bill, situate to the southward of Bacaim, bears EbN.

There is a point that projects a little into the sea, from which extends a reef of rocks above water. The town is within this point, in which is built a little tower, encompassed with cocoa trees; it is on this tower the Portuguese hoist their flag, and have a battery of guns that front the road. The

coast to the northward of Barfabas is sandy; and in some places are rocks, which do not extend, at farthest, above a quarter of a league off shore.

About Bacaim the coast is even; and at the end is a valley, wherein the town is situated. To the southward of the town is a high round hill, on which the Savejee has a fort.

When this fort bears east, you then have open the entrance of the port of Bacaim. The opening is between two little islands or rocks, between which you must pass, one on the north side, the other on the south. This port has but little water, and is only fit for very small vessels.

Some years ago a considerable army of the Marattoes, after a siege of 18 or 20 months, took the city and fort of Bacaim from the Portuguese.

To the NNW. of Bacaim is an island covered with trees, and detached from the coast.

It is reckoned 12 leagues NNW. from Bacaim to Cape St. John. In this part keep off shore at least $3\frac{1}{2}$ leagues, on account of the rocky banks which advance into the sea at 2 or 3 leagues. From latitude $19^{\circ} 40' N.$ at this distance, the depth is 17 or 18 fathoms.

If necessity obliges you to turn it, you must come no nearer than 16 fathoms, for fear of falling suddenly on some places of 7 or 8 fathoms, foul ground. The tides, which generally set NNE. and SSW. sometimes incline toward shore. You must observe this, and not \rightarrow , unless you find it impossible to stem the current.

CXXXVI. *Of CAPE ST. JOHN, ROAD of SURAT, and SURAT.*

Cape St. John lies in $20^{\circ} 2'$ or $3' N.$ Three or four leagues inland, to the southward of this cape, are two high hills or peaks, one called the Peak Anoul, in form of a pyramid, the other like a castle. All the coast is high from thence to the cape, the extremity of which is highest. Along shore the land is low, and covered with trees.

When you have doubled this cape, and are bound for Surat road, keep the mid-channel, where you have 16 or 17 fathoms, mud. Above all, take care of sailing too far to the westward, and of nearing the outer banks farther than 20 or 22 fathoms, mud. If you find, upon sounding, either sand, gravel or rock, you will be near these shoals, over which you cannot pass, even at high water: then you must immediately stand to the eastward, to regain the channel. On the east side you must not come under 10 fathoms; but if your soundings are gravel or rocky, you must stand right off to the westward.

Too

Too near the land is dangerous, the currents horsing you thereon in a calm; and a good way out lie several rocks under water. Take particular notice of this till you are got to the northward of Demawn; then you may near the coast at pleasure, for the bottom all along is soft mud as far as Surat road.

The coast between Cape St. John and Surat river is low and even. About 3 or 4 leagues to the Southward of the entrance there are three little hills. They \rightarrow in Surat road in 10 fathoms mud, 2 leagues off shore, and the mouth of the river NbE. The sea rises and falls about 3 fathoms.

Three leagues northward of Surat river, lies the port of Swaley: to sail thither you must get an able pilot, on account of the many shoals which you meet with in the passage.

Surat is 5 leagues from the rivers mouth, in $21^{\circ} 10' N.$ latitude, and $72^{\circ} 17' E.$ longitude from London. This city is a place of the greatest trade in the East Indies. The English, French and Dutch, have each a factory there.

Of the Laccadive Islands.

CXXXVII. *The LACCADIVE ISLANDS.*

To the westward of the Malabar coast is the Archipelago of the Laccadives. This is the general appellation for the islands to the northward of the Maldives, or Maldivia Islands. They extend from $8^{\circ} 10'$ to $12^{\circ} 50' N.$ latitude. There are nineteen principal ones, most of them surrounded with shoals and steep rocks; so that navigators are at a loss to know when they are near them. This makes their approach very dangerous.

CXXXVIII. *Of the ISLANDS SEUHELIPAR and CALPENIA.*

Between these islands are many passages, through which the ships bound from the East-Indies, toward the Red Sea, or the Persian Gulf, commonly proceed. The most known, especially by European ships, is that of Mamala, commonly called the $9\frac{1}{2}^{\circ}$ channel. It is bounded on the north by the islands Seuhelipar and Calpenia, and on the south by the island Malika. In captain Cornwall's chart, made from a description given of these islands by a pilot born on the Island Qualpena, it is Soolepaul. The islands are variously named and placed, as well in latitude as longitude, by different authors. The first of these islands lies in about $10^{\circ} N.$ latitude. Mr. Nicholson, in his

Majesty's ship Elizabeth, 1764, was in latitude, by observation, $9^{\circ} 49' N.$ and longitude, made from Calicut, $3^{\circ} 6' W.$ when he saw the Island Seuhelipar from the mast-head, bearing NbE. distance 6 or 7 leagues; so that its latitude must be $10^{\circ} 10' N.$ He observed the variation in the morning, before they saw the island, $1^{\circ} 5' W.$ This island has a reef off the south point, which reaches near 2 leagues. The island Seuhelipar, like all the rest in this cluster, is exceeding low, and is only perceived by the trees that cover it; so that it cannot be seen at more than 6 or 7 leagues off, in fine weather, according to M. du Fai, captain of the ship Amphitrite who made it in 1736. The next day he had also sight of Calpenia island, equally low and woody. By others its latitude has been observed $10^{\circ} N.$ and appearing encompassed with rocks. Captain Cornwall says it has a river, where vessels of two hundred tons may float and clean. Its distance from the Coast of Malabar and the other islands, as exhibited in the new charts, is founded on observations, and the remarks of navigators who have passed between them.

CXXXIX. Of MALIQUE ISLAND.

The situation of the island Malique is very uncertain. Several make a doubt even of its existence; but others are of a different opinion. It is in $9^{\circ} 15' N.$ latitude, according to the opinion of navigators.

The extent of the second passage is known with more certainty than the channel of Mamala; it extends between the island of Kelay or Sindal, and the northernmost of the Maldives. M. Houffaye, an experienced captain of the French India company's ships, saw them both, and observed their latitudes. Many navigators think themselves exposed to an evident danger, in passing this channel, on account of its having been hitherto but imperfectly known.

The following is an extract from the Journal of the Sieur Houffaye, second captain of the ship Le President.

"The 1st of July, 1685, at five in the morning, we had sight of four of the northernmost Maldivian islands, bearing SWbW. about 3 or 4 leagues. The largest of them seemed to us about a league in length. They are all very low; it is the trees on them only that make them visible: these in fine weather may be seen 5 leagues off. The northernmost I take to be in $7^{\circ} 15' N.$ latitude. At 8 A. M. being 2 leagues from these islands, we sounded with 120 fathoms of line, but no ground. Coasting the said islands about ten o'clock, we made seven others, of an equal height; that is to say, all very low. There appeared some rocks apart, but very near the land. Of the third island to the southward, we saw breakers a great way off, and all seemed very dangerous."

From

From this journal, and the report of several navigators, it is certain that the northernmost of the Maldives doth not exceed $7^{\circ} 30' N.$ latitude, and that the southernmost doth not extend beyond the equinoctial line.

Another Extract from a Journal of the same Author, in the same ship, in 1687.

“ From Tuesday noon, the 29th of July, to Wednesday the 30th, at half an hour after one in the morning, by light of the moon, we saw the island Sindal, or Canala or Kela. I reckoned that I was then in $8^{\circ} 20' N.$ latitude, and about $95^{\circ} 55' E.$ longitude, from the meridian of Teneriff, being at that time about half a league from the said island, which is low like the islands of Glenan, on the coast of Bretagne. We saw breakers abreast of us; and hearing the noise of the surf very plain, we put about and sounded: no ground with sixty fathoms of the line; the body of the island bore SbE. the wind being then at SW. We found ourselves too near land, so stood off a little; and at day-break we saw this island: it is very low, especially on the west side; there it is almost even with the water; and there is a long point, whereon the sea breaks very high. It is higher at the east end, and may be about 4 leagues long. In sailing to the northward of it, it appeared to us round, having large rocks about it, especially at the NE. end: we saw these run out a great way. This island may be seen at 4 or 5 leagues off. It is very dangerous, and I do not think the 8° channel so good as that of 9° . I find, however, that one may pass clear of the Maldives, between $7^{\circ} 55'$ and $7^{\circ} 20' N.$ latitude; but rather prefer the passage of 9° , as above mentioned.”

This determines the latitude of the northernmost part of the island, $8^{\circ} 18' N.$ In May, 1751, captain Nicholas Webb, in the Warwick, saw this island, (which he calls Canala, after the English Pilot) at 11 A. M. bearing NEbE: E. 5 or 6 leagues. Then they steered EbN: N. 4 miles, and at noon had a very good observation, by Hadley's quadrant, in latitude $8^{\circ} 4' N.$ whereby it appears, that the body of it lies in about $8^{\circ} 10'$ or $11' N.$ He made above 29° meridian distance from Grand Comero; but supposes he had met with strong westerly currents; and therefore those bound to Zeloan, &c. should always make this island, as the departure cannot be depended on. He made from hence about 7° easting to Zeloan, and describes it as very low and woody, about three leagues long; lying nearest ESE. and WNW: that off the WNW. end there is another small island, with a few trees on it; and a reef breaks from one to the other. As it is so very low, he would advise lying-to in the night, when near it, and keeping a good look-out in time. Next year also, in the Edgocote, Captain Pearce made this island,

island, calling it Mincoy, after Captain Cornwall; and made its latitude $8^{\circ} 17' N$. They allow it to answer the description given of it by M. Houffaye, and add further, that on the westernmost end there is a cluster of trees; that in some places it is bare; and that there are four remarkable trees, paired, about 2 leagues from the E. end, or perhaps 2 miles; else it had been more expressive to have said about the middle of the island, as they allow the whole length but 4 leagues, and Captain Webb but 3. Probably the two islands he mentions join together at low water, as no notice is taken thereof by others; and then he may agree in the length with them.

Probably a passage may be found between the island Malique, (whose situation is undetermined) and that of Kelay. Those navigators, who come from Monfambique channel, called the Inner Passage to India, from the islands Mauritius and Bourbon, or from any other place situate in the western part of the Indies, and are bound for the Coast of Coromandel, Bengal, or other places eastward, may safely pass between the two channels above described, provided they take care to keep within the latitudes prescribed.

By this means they will shorten their voyages, and not expose themselves, on the Coast of Malabar, to the westerly winds, that blow there with great violence, during the height of that monsoon. This may be a caution to those that sail to the northward of the Laccadives. It is not always sufficient, in order to avoid this danger, that you keep that coast at a great distance; the precaution may sometimes be rendered useless by the sudden violence of winds and currents.

Some navigators prefer the north passage to the channel in $9^{\circ} 1'$, on account of the heavy squalls and rains that happen between these islands, as well as on the Coast of Malabar, during the months of June, July and August; so that ships bound to the Indies should run near shore, for want of being able to observe the latitude. The currents met with near these islands, make one more liable to mistake hereabout. By the journals of those ships that have sailed among these islands, it appears that the observations for the latitudes have not been so few as hath been supposed; and that many of these have contributed towards ascertaining their situation.

On approaching these islands the currents set to the southward, as they do also through the channels. The greatest error caused by the currents, in this latitude, doth not exceed twenty miles in twenty-four hours; generally it is about twelve miles. If the darkness of the weather, or any other inconvenience, prevents an observation for the latitude, you may by proportion compute

pute the error or difference, and direct your course accordingly for a sight of, or soundings off, the Coast of Malabar, which place you should make before you attempt the island Zeloan.

M. de la Garde, commanding a ship of the company, in passing this channel, found the sea changed, as if it had been in thirty fathoms. He at that time reckoned himself ashore, to account for this appearance; but this was not sufficient. He sounded several times, but finding no ground in 100 fathoms, continued his course eastward, and would not sail southward till he had seen the Coast of Malabar. Without this his ship had inevitably run ashore on the Maldivia isles.

Several navigators have neglected this precaution; but such should not be followed, because, after a long voyage, there may be a considerable error in your reckoning, and when you think you have passed the Laccadives, and bear away to the southward, you are in danger of running on the Maldives, or some other island in the channel. The change of colour in the sea, which generally evinces soundings, is not in this part a certain sign; especially if you have not seen any of the islands. You should absolutely assure yourself by soundings.

CXL. *The BANKS of CHERBANIAN and PADUA*

To the northward of the Laccadives, you find the banks of Cherbaniang and Padua, extending to 13°N. latitude. These rocks are so much the more dangerous, as they do not break, and are not perceived till you are upon them. You find again some banks more notherly, whereon many ships have sounded, and which, according to their report, are not dangerous. But, that you may not be deceived by the conformity of depth on those banks, with that of the Coast of Malabar, take the following directions. The navigators that sail to northward of the Laccadives, viz. those from the Arabian or Persian Gulf, generally content themselves (especially in bad weather, or the westerly monsoons) with getting soundings on the Coast of Malabar; then they steer SSE. and SbE. in order to keep mid-channel between the islands and the coast. But supposing a sounding had been made on one of the banks abovementioned, it is evident (from their situation, in respect of the islands) that a ship by this course would hazard the running ashore on one of them.

The best way to avoid this danger, when the weather will not permit you to see the coast, is not to depend upon your first sounding, but to keep your course some time; then, if you lose soundings, it is a true sign you sounded on one of the
the

the banks; but if they continue, you may be sure you are near the coast. This observation deserves the attention of those who have the care of ships committed to their charge. It is best to make the Coast of Malabar in 14° from $10'$ to $20'$, and to get in good time into this latitude. If you are coming from the southward, and bound to Goa, this method is very well; but if you are bound to Zeloan, there is no business for a ship coming from the southward, to the northward of the 9° channel. If bound to Bombay, in the westerly monsoon, it is best to make the land in the latitude of Hunary and Kanary, and not before. By this you have nothing to fear from the Banks of Cherbaniang; which shoal is placed 80 leagues from the coast by some, and 100 leagues by others.

Forty-five leagues west of Goa, some pretend to find a bank, extending from north to south, upon which are found 30, 40 and 50 fathoms. Some persons have assured, that the Agrian corsairs used to go thither to \rightarrow in fine weather, to wait for ships to plunder.

Of the Laccadive Islands and the Channels between them.

CXLI. *Of the ISLANDS SEUHELIPAR, MALIQUE, and the TEN-DEGREE CHANNEL.*

The Laccadive islands are all low and sandy, covered with cocoa-nut-trees; and are not to be seen above 5 or 6 leagues from the mast-head, in clear weather. Some of these islands are inhabited, and others not, being so very low, that the sea sometimes overflows them; and they are surrounded with breakers, some distance from them.

The island Seuhelipar is distant thirteen or fourteen miles from the mast-head, bearing N. by E. 6 leagues; (its latitude $10^{\circ} 2' N.$) and when in latitude $9^{\circ} 49' N.$ the variation has been taken $1^{\circ} 8'$ and $1^{\circ} 5' W.$ The longitude from Calicut to the Island Seuhelipar, $3^{\circ} 6' W.$ by this the longitude of these islands is determined with great certainty. The Island Seuhelipar is in latitude $10^{\circ} 2' N.$ and longitude from London $72^{\circ} 24' E.$ from Cocheen $3^{\circ} 31' W.$ and from Anjanga $4^{\circ} 1' W.$ The variation in sight of this island has been taken $1^{\circ} 5' W.$

The Island Malique bears from the Seuhelipar SSE $\frac{1}{2}$ E. distance from shore to shore, 16 or 17 leagues. Malique's latitude $9^{\circ} 12' N.$ longitude from London $72^{\circ} 51' E.$ from Cocheen $3^{\circ} 4' W.$ and from Anjanga $3^{\circ} 34' W.$

Between

Between the islands Seuhelipar and Malique is reckoned the best passage to the Malabar coast. This is called the Ten-degree Channel. The best latitude to keep in, to go through this channel, is $9^{\circ} 36'$ or $9^{\circ} 40' N.$ By keeping in this latitude you will sail through this channel with safety to the Malabar coast; but if you want to make either of the islands, you must keep in a latitude accordingly. You will see Seuhelipar in latitude $9^{\circ} 49' N.$ and Malique in latitude $9^{\circ} 25' N.$

Be careful to keep your parallel of latitude in sailing through these islands; for, though the current in general sets to the southward, or south-westward, it sometimes sets to the northward. It sets seven, eight, or ten miles to the northward, in twenty-four hours; but in general it sets to the southward and south-westward, as before mentioned.

Suppose a ship in the Indian Sea, between Cape Baffes and the Laccadive Islands, steering to the eastward, in the SW. monsoon, in order to go through the Ten-degree Channel, in the parallel of $9^{\circ} 36'$, or $9^{\circ} 40' N.$ and has reduced the variation to $2^{\circ} 30' W.$ she is then about 3° of longitude to the westward of the Island Seuhelipar. When the variation is $1^{\circ} 30'$ or $1^{\circ} 27' W.$ she is about $1^{\circ} 40'$ or 2° to the westward of Seuhelipar; and when the variation is reduced to 1° or $1^{\circ} 5' W.$ she is as far to the eastward as the abovementioned island, and may depend upon it, is not far from it, if in the latitude $9^{\circ} 36'$ or $9^{\circ} 40' N.$ Therefore steer to the eastward in this parallel of latitude, and you will safely go through this channel:

If you see either of the islands, you may take a fresh departure, and direct your course for Cape Comorin; but if you pass through this channel without seeing any of the islands (which is often the case, as the weather in the SW. monsoon is generally very cloudy and hazy) you must continue to steer to the eastward, in the above-mentioned parallel of latitude, till you strike soundings on the coast of Malabar.

CXLII. *Of the ISLANDS CALPENNY, KELAY, and NINE-DEGREE CHANNEL; and SOUNDINGS near MALABAR COAST.*

The Island Calpenny lies nearly due east of Seuhelipar about 27 leauges, and from Cocheen $2^{\circ} 11' W.$ its latitude $10^{\circ} 4' N.$

The Island Kelay bears from Malique SbE½E. distance 17 or 18 leagues. Kelay's latitude $8^{\circ} 13' N.$ and longitude from London $73^{\circ} 9' E;$ from Cocheen $2^{\circ} 46' W.$ and from Anjanga $3^{\circ} 16' W.$

Between the Island Malique and the Island Kelay is also a very good passage to the Malabar Coast: this is called the Nine-degree Channel. The best
P latitude

latitude to keep in, to go through this channel, is $8^{\circ} 45'$ or $8^{\circ} 50'$ N. Be sure to keep your parallel of latitude, and you will go through this channel with safety; and run to the eastward till you get soundings on the Coast of Malabar, &c,

In latitude $9^{\circ} 40'$ N. which is a little to the southward of Cocheen, you will strike soundings at 60, 50, or 40 fathom, 15, 13, or 11 leagues off the coast; and the water will shoalen gradually as you run for the coast.

In the above latitude, and in clear weather, you can but just see the land from the deck, in 23 fathom water, distance off shore 6 or 7 leagues. Cocheen Flag-staff E. by N. 3 leagues, you will have 13 fathom water, ouzey ground. You will find a southerly current, which will set you twenty-four miles to the southward in twenty-four hours. If you go into 28, 30, or 32 fathom water, that will be as near shore as you need go; you will in the above depths, be 8, 9, or 10 leagues off shore. You may then steer a SSE. course, which will lead you along shore; or you may here take a fresh departure, and direct your course for Zeloan or Ceylon. As you run to the southward, you will deepen your water. In latitude $9^{\circ} 15'$ N. and 28 and 30 fathom water, you will not be more than 5 or 6 leagues off the land. If you go by your soundings, keep in 40 fathom. Off Anjanga, in latitude $8^{\circ} 40'$ N. you have 24 fathom, within five or six miles of the shore. Off Ruttera Point you will have 25 or 26 fathoms within three miles of the shore. Keep out in 40 or 50 fathom, and you will go without the rock discovered by his Majesty's ship Elizabeth in 1759: this lies in 35 fathom water. If you have 40 or 45 fathom water off Cape Comorin, you will be distant from the Cape 8 or 9 leagues, and may then take your departure from it, and make Point de Gall.

Of the Coast of the Island Zeloan or Ceylon.

CXLIII. Of MANARA, ARIPIA, and the ISLAND CARIDIEN.

Manara, or Manaar, whose southernmost part lies in $8^{\circ} 57'$ north latitude, discovers itself by the clusters of cocoa-trees, to the westward of the river, or passage between the islands Manara and Zeloan; at the entrance of which is 13 or 14 feet water. A ship of any tolerable size should not \rightarrow , but at a good league off, to the westward of this channel. Along the east-end of
Manara

Manara island, within gun-shot of the shore, you have 20 or 21 feet water. In the fair way there is a reef, which lies NW. and SE. off Aripa, the south end of which bears from the passage of Manara SWbS. about 4 leagues, and the north end, WSW. $4\frac{1}{2}$ leagues. This reef is composed of craggy rocks; over which there are several different passages. These are only navigable for the country vessels, and in calm weather; for when the winds blow a little fresh from the southward, it breaks over all: you should therefore stand to the north-westward, 'till about a league off its north point; and then you may (in small craft) shape a course without fear toward the passage of Manara, or any other place you think proper. Within this reef, toward the straits, or passage of Manara, the depth decreases gradually to thirteen or fourteen feet water.

From Manara to Aripa, the course is SWbS. 14 miles. The coast forms a sort of bay between the two. Aripa is known by a small village, and a little church; off which, NWbW. two miles or thereabout, you meet with a rock, which hath 8, 9, or 10 feet water; so that the country vessels can pass over it. In the right channel you find 14, 15, or 16 feet water. It is convenient then, in sailing between Manara and Aripa, to keep this depth, and come no nearer, nor stand farther off shore.

The barks or small vessels, bound from the southward to Manara, should observe, when they are to the northward of the west point Cardiva, or Gardive, to keep about 3 leagues off shore, in 18 or 20 fathoms, pebbles; then to steer NNE. and NEbN. till they bring the church of Aripa to bear east. Keeping this course, when in 4 or 5 fathoms, they will see the reef break, and the rocks from the shore to the reef: then they shape their course by keeping in the above depth of 14 or 15 feet rocky ground.

If you are bound from the southward to Manara, in larger ships, when you are 3 leagues to the westward of Cardiva Point, in the above-mentioned depth, be sure to steer north till you see the reef break, and then stand off to westward about a league, till you are round it. From thence you may see the Island of Manara to the NE. You may then hawl in again, and approach it just as is convenient for your ship, constantly sounding and keeping a good look-out. It sometimes happens in this track, that from the depth of 20 to 25 fathoms, it diminishes 2 or 3 fathoms all at once. This sudden change happens either near the land or reef: but you need not be at all concerned, if it is off the island; for, having once got into 7 or 8 fathoms, you have regular soundings, decreasing gradually toward shore to 5 fathoms, sandy
P 2 ground.

ground. If, when you are near the reef, you have 8 fathoms, pebbles and gravel; it is to be avoided.

From Aripa to the island Caridien, it is 7 or 8 leagues SWbW. This island is about 2 leagues in length, and is of an irregular form, of several points. The southernmost lies in $8^{\circ} 26'$: it is a reddish hill, steep and almost in the shape of a cone. You have 8 or 9 fathoms, 4 leagues off, rocky ground. In clear weather, coming from the westward, 4 or 5 leagues off, you may see the bottom in 15 or 20 fathoms. In approaching it, the depths are unequal, and require to keep the lead going. Be not surprised if, after having but a few fathoms, you on a sudden find 8 or 9; because from $3\frac{1}{2}$ leagues off shore, as you stand toward it, the depths are very uneven, between 8 and 9 fathoms, to about a league off the island, where there is a bank of but 3 fathoms, the bottom of flint. When you have passed this bank, the bottom is sandy, in 5 fathoms. To the south eastward of this island, there is a bay about two leagues from Calapeten or Calpentin.

CXLIV. *Of POINT CALAPETEN, the RIVER CHILOA and MORABEL.*

From the south point of the island Caridien to the westernmost point of the island Calapeten, the coast is SW. $4\frac{1}{2}$ leagues. Uneven soundings are in this part, nearly as above. The inner edge of a bank of 3 fathoms, is situate within a musket shot of the shore, and extends beyond Calapeten: about two miles from thence lies a ledge of rocks, on which the sea breaks. This point is easily known by a tuft of trees, exceeding thick: there is nothing like it, except on the main to the eastward, on the island Zeloan, where you perceive about 100 cocoa-trees. Between these trees and this thicket, at the bottom of a little valley, is a bight which is called Naverary, or Nevecary bay, which affords no shelter from the westerly winds. The bottom and the adjacent parts are so foul and dangerous, that there is no \rightarrow in any part thereof, without risking the loss of your \rightarrow , even within the bank of 3 fathoms; except very near Caridien or Calapeten, in 4 or 5 fathoms.

From the point of Calapeten to Chiloa, it is reckoned 8 leagues. The course, to sail clear of all, is SSW. To the southward of the bay Naverary begins a ledge of rocks and coral, which extend along the coast to within a league northward of Chiloa, where, as it widens about a league, it may be proper to keep the lead going: farther off shore the bottom is sandy.

The river Chiloa discovers itself by a sandy mountain, on which may be seen some bushes, and a little round hill inland. If you come from the southward,

ward, you may sail near the coast, till opposite this river; but, to the northward of it, you must keep, for two miles, wide of this ledge of rocks and coral, before you stand in for the shore. The bottom between Calapeten and Chiloa is of fine sand, sometimes a little coral: but, the nearer you approach Calapeten, the ground is still worse for \rightarrow .

From the river of Chiloa to Morabel, the course is SbW. Westerly it is deeper between these two places than any above mentioned. You may approach the coast, by the help of the lead. Morabel is known by two or three gardens of cocoa-trees, which trench a little inland, and (coming from the northward) resemble those of Naverary or Calapeten.

CXLV. *Of the RIVER CAYANEL, NEGOMBO, COLOMBO, GALKETIN, PANTURE and CALITURA.*

From Morabel to Cayanel the coast lies SbW. 4 leagues. Cayanel is a river that makes a sort of point, in sailing from the northward; on it are a number of cocoa-trees. The bottom is good between these two places, especially near shore.

From Cayanel to Negombo, the course is SbW. 2 leagues. From the northward, the land seems to form a bight. If you are to pass by Cayanel, you must edge a little from it, on account of a ledge of rocks, which are found between this place and Negombo; and keep 2 leagues off shore, in 7 or 8 fathoms till you bring Negombo to bear SEbS. By this means you avoid a rock, which lies NNW. off the flag-staff, or the north point of the fort; at the foot whereof you have 6 fathoms, and upon it 10 feet. When bound to Negombo from the southward, bring the fort to bear SE. and keep that course till you \rightarrow , without borrowing any more to the northward. Negombo is known by a point the most projecting upon the whole coast, on which is a thick wood of cocoa-trees. Off this point lies a ledge of rocks, of small extent.

It is computed 6 or 7 leagues SbE. from the outer point of Negombo to Colombo. You find a good bottom all the way, except it be over-against a little river, where a rocky point projects about two miles. Keep in 10 or 12 fathoms. You may \rightarrow before Colombo in from 6 to 7 $\frac{1}{2}$ fathoms, the flag-staff bearing south; but come no nearer the river, because of the rocks lying at its mouth, and round the south point.

From Colombo to Galketin the course is south, 3 leagues. It is a little round bay, open and without shelter. Ships generally coast it about 4 miles off, in 13 fathoms, sandy ground.

From

From Galketin to Panture it is $3\frac{1}{2}$ leagues, south. To sail from one to the other, keep in 18 fathoms, because under ten fathoms is rocky ground. Panture is a river, known by two rocks above water; they are on the north side of the entrance, at the distance of two gun-shots. The \rightarrow age is to the southward of these rocks, in 10 or 12 fathoms, two miles off shore.

From Panture to Calitura is SbE. distance about $3\frac{1}{2}$ leagues. To the northward of Calitura lies a rocky bank; on the south side of the river is the fort, built on a little eminence. If you purpose to \rightarrow at this place, take for your guide two other little hills (beside that the fort is built on) near each other, and not far from the shore. The northernmost is the lowest. As soon as you see the fort between these two, steer right for them, into 4 or 5 fathoms; but come nothing to the southward of these hills, for fear of danger. Observe that, standing toward the fort, the bottom is very foul in 15 or 16 fathoms, but tolerably good from 6 to 4 fathoms.

CXLVI. *Of BARBERIN ISLAND, POINT COCACHEIRE and RAGAMMA.*

It is reckoned about 2 leagues from Calitura to Barberin island, you sail along shore in 7 or 8 fathoms. To the southward of Calitura is a rock 12 or 13 feet under water; it bears SW $\frac{1}{2}$ S off the fort, and SWbW $\frac{1}{2}$ W. off the little hill of Makvenien or Makvene. The passage is good, in 4 fathoms, between the shore and this rock, which is about 2 miles wide; but it is better to go without, coming no nearer than 6 fathoms. Between Makvenien and Barberin, the bottom is foul in 15 fathoms, and tolerable from 15 to 20; but above 20 it is very bad, rock and coral, so that, in sounding, scarce a grain of sand will come up with the lead.

Barberin is an island, known by its small distance from the main land of Zeloan. You may \rightarrow to the northward of it in 6 or 7 fathoms; there is also a little bay for barks, or long-boats. Care must be taken in rounding the western point, where there are several rocks. The \rightarrow age of this bay is in 2 or 3 fathoms, sandy ground, a small musket-shot off shore.

From Barberin Island to Point Cocacheire, the course is SSE. 4 leagues. Between the two, about two miles from Barberin island, runs the river Alican, or Beneto; to the southward of which is a little fort, upon an eminence. The \rightarrow age is good, in 12 or 13 fathoms; black sand. To the northward of this river are two rocks, plainly to be seen. At 4 leagues off, between Barberin and Point Cocacheire, you have from 28 to 30 fathoms, hard ground. From this last place, you may coast it very near, in 7 or 8 fathoms; but

but, at 4 leagues distance, 100 fathoms are not enough (sometimes) to reach the bottom.

From Point Cocacheire to Ragamma, the course is SE. and the distance 5 leagues. Between the two is a little river or brook, in which boats can scarcely enter; to the southward thereof is a little red hill, steep to seaward. About a musket-shot to the northward, is a garden of cocoa-trees, called Amlamgoda: from thence to Ragamma, it is reckoned 3 leagues. Four miles to the southward of Amlamgoda, a reef runs out about two miles, upon which the sea continually breaks. You must come no nearer, in this part, than 20 fathoms. At 15, the soundings are irregular, and very foul to 9, 8, and 7. It is in some places sandy, but not very clean. Prudence requires those who sail along this coast, not to come under 20 fathoms. Ragamma advances like a point into the sea: there are upon it some clusters of cocoa-trees; and, on the edge of the shore, some large high rocks, by which it may easily be known.

CXLVII. *Of POINT DE GALA or GAULA, and RED BAY.*

From Ragamma to Point de Gala or Gaula, the distance is 4 leagues SEbE. In coasting it, you must not come under 25 fathoms. A good league to the southward of Ragamma lies a rock, having only 12 or 14 feet water, and 15 or 16 fathoms all round it. Look out for a little reddish hill, on the edge of the coast; the rock of Gendore being over-against it.

To the southward of Gendore or Grandere, are also two rocks under water: about a cable's length without these, you have 15 or 16 fathoms. These rocks may be easily known; they are but 5 or 6 feet under water, and the sea breaks over them continually. Boats or small vessels may pass between these rocks and the shore, in 9 or 10 fathoms; but it is better to go near the rocks than the shore, because the soundings are irregular, and increases or diminish 2 or 3 fathoms at a cast; yet you never have less than 4 or 5 fathoms.

Within Point de Gala or Gaula, is a bay. The Dutch have there a considerable settlement, well fortified, with a good garrison. They do not suffer any strange ship to enter, without sending them one of their pilots, in order to preserve the knowledge of the pilotage thereof to themselves. There is nothing to be remarked, concerning this place, unless to come no nearer it than 16 or 18 fathoms, the flag-staff bearing NNE. if you would \rightarrow in good ground.

Before

Before the Bay lie two rocks under water, one whereof is covered with 13 feet, the other with 17 feet; they have round them 10 or 11 fathoms. If you come no nearer than 15 fathoms, you run no danger of foul ground. On the east side of the bay is seen a rock, on which the sea breaks.

Point Gaula is in $6^{\circ} 6'$ north latitude, and $80^{\circ} 10'$ east longitude from London.

From Point Gaula to Red Bay is $5\frac{1}{2}$ leagues, the coast trenching EbS.

About a league to the westward, or WbN of this bay, is seen a little island, planted with cocoa-trees, and called Woody-Island. In sailing from the westward, to enter Red Bay, you must coast it 12 or 14 fathoms, till you have doubled a red steep point, which makes the entrance of this bay. Then you discover a reef very near shore, by which you must sail, (in the depth above-mentioned) till you perceive, on the west side of the bay, a little island near shore, and a rock within the reef. You must keep on to the eastward, till you bring the rock and the island in one. When they bear N. and NbW. you must near the rock, to within a stone's throw; and having passed it a cable's length, \rightarrow in $4\frac{1}{2}$ or five fathoms; but two cables length from it, you stand a chance of running into very foul ground.

Before you steer with the rock and island in one, bring them to bear NNW. to round the reef, because at the point of the reef lies a rock under water, which hath but eleven or twelve feet. This caution is absolutely necessary, to prevent being lost here.

To the eastward of this bay are high lands, and a little village called Maitre; but it is impossible to come near this coast, on account of a ledge of rocks, which surround almost three parts of the bay.

To go out of the bay, you must steer contrary to the instructions given you to enter it; and when you have got again into 14 fathoms, you may proceed as you please, keeping the lead going, and a good look-out.

CXLVIII. Of MATURA RIVER, DONDREHEAD, GAELIES BAY, and DICKWELL.

From Red Point to Matura, the distance is about 3 leagues EbS; S Matura is a river, at the mouth of which are two or three rocks: about a gun-shot to the eastward, you see a little island near the main, like Woody Island above mentioned. Athwart this bay or river there is a reef or ledge of rocks, stretching out from the western shore, about two miles. To \rightarrow before the river Matura, you must come no nearer than 12 fathoms, till the island

island bears NbE. and NNE. then you may stand toward this island (in a small ship) as near as you please. Or you may \rightarrow within the ledge of rocks opposite to the river, in $4\frac{1}{2}$ fathoms; but you must first round the reef, as aforefaid.

From Matura river to Dondrehead is reckoned 4 miles SE. There is a ledge of rocks running out about a mile SW. from the west part of Dondrehead, upon which there are but 9, 10, and 12 feet water. On the outer side are 6 or 8 fathoms, and within, toward the shore, 3 or 4 fathoms; therefore great care must be taken in approaching them. Being off Matura, in 12 fathoms; if you steer EbS $\frac{1}{2}$ S. you pass Dondrehead, at 2 miles distance in 15, 16, and 18 fathoms. This point is low, and on it is a pretty large cluster of cocoa-trees, which makes it easily known.

From Dondrehead to Gaelies the course is E3 $^{\circ}$ S. 1 league. The point of Gaelies is high and steep. To \rightarrow within it, you must round it, within half a musket-shot of the shore; otherwise it is exceeding difficult to enter, and to come to without danger of losing your \rightarrow ; therefore you will do well to keep as close to it as you can. The danger, however great, is visible.

Gaelies is a little round bay, to the Westward. Ships may safely \rightarrow here in 4 or 5 fathoms, mud. They are here sheltered from the westerly, northerly, and southerly winds; but the easterly winds raise a small swell.

From Gaelies to Dickwell the coast lies ENE. $2\frac{1}{2}$ leagues. Bamberand is between the two; and between this last and Dickwell lies a ledge of rocks, near two miles from the shore, on which the sea oftens breaks. You must come no nearer than 15 fathoms.

Dickwell is known by an orchard of cocoa-trees, which seems to be two miles in length. There is also, between the ledge of rocks above mentioned and the shore, a reef about a musket shot off shore.

From Dickwell to Nielwell is reckoned 2 leagues ENE. You may coast it in 12 or 14 fathoms, within a cannon shot of the shore.

CXLIX. *Of the BAYS of NIELWELL, COENACKER, TANGAL POINT, WASLUE RIVER, MAGO POINT, and ELEPHANT HILL.*

Nielwell is a bay, the west part of which affords shelter from the SSW. and west winds. On its western point is a little hill, which in sailing along that coast (coming from the westward) looks very much like a little island, covered with cocoa-trees. You must pass as near it as that of Gaelies, in 12 or 14 fathoms. Off the east point lies a rock above water. In the bay you
Q need

need fear no danger, except three flat rocks near the shore, and over which (it is said) the largest ships may pass. It may not be unnecessary to enquire into this by sounding.

From Nielwell to Coenacker, or the bay of Kerketoës, is reckoned two miles ENE;E. It is a large bay. You must keep near shore, as above mentioned, in 12 or 14 fathoms. Exactly in the middle of the bay you perceive a large rock, and to the westward a small steep point, like that of Gaelies, near which you must fail to get into the bay.

From Coenacker to Tangal are 2 leagues ENE;E. It is a point, under which is a little bay. You may keep along this coast in 12 or 14 fathoms.

From Tangal to Waelue is reckoned 4 leagues ENE;E. The land between the two is low and sandy on the coast, but high and steep in land. You may coast it 4 miles off shore in 20 or 22 fathoms. The bottom is sand, mixed with coral.

Waelue is a large river, which hath to the northward a little mountain. Opposite the river's mouth, about four miles off shore, there lies a rock, on which the sea generally breaks. You may pass within it, in 7 or 8 fathoms, sandy ground.

From Waelue to Mago, the course is ENE. northerly.

Mago is a point surrounded with rocks. Half-way between them the bottom grows foul; therefore you should keep in 22 or 24 fathoms. You may see, between Waelue and Mago, the salt houses of Mazen. This is a little bay, wherein nothing but boats can enter. It is said there is a rock within this bay.

The English Pilot says, that to the eastward of Mago, about 8 miles off shore, lies a rock above water. Possibly these may be some rocks of the Great Baffles, nearer shore than others. Many persons who have passed near this reef, have assured that this is the only foundation for this account. Those who make this coast should be upon their guard.

From Mago to a little remarkable hill, called the Elephant, situated near the shore, it is reckoned 6 leagues. The bearings NE. and SW. To the S;E. of the Elephant, you find the Great Baffles; a ledge of rocks, on which, according to the natives of the country, there was formerly a pagado of brass. The inhabitants to this day call it Crowncotte in their language.

CL. *Of the GREAT BASSES and LITTLE BASSES.*

The Great Baffles extends about a cannon-shot in length, and the same in breadth. The sea breaks here very high, and some of these rocks shew themselves

selves above water. You must give them a good birth, and come no nearer than 30 fathoms. It lies 3 leagues off shore, and you may sail within it, by keeping a little nearer the land than 8, 9, 10 and 12 fathoms. You must come no nearer the shore than 8 fathoms, nor the Great Baffles than 12. This is to be observed till the Elephant bears NNW. when, if you are mid-channel, steer ENE. or if you are nearer land, EbN. till you get into 30 fathoms; then steer NE. to sail without the Little Baffles.

The English Pilot says, that to sail from Dondrehead, to get clear of the Great Baffles, it is necessary to steer ESE. According to this course you would sail very wide of it; and probably there would be great danger of being drove off the coast, with much difficulty to regain Zeloan; because, during the westerly monsoons, the currents set strong to the eastward in this part. It is true, that in shaping your course by night, you must beware of the currents: they set in shore as well as to the eastward. It seems sufficient, being 2 leagues south of Dondrehead, to steer eastward. Mr. Nichelson is of opinion, that a ship, being 2 or 3 leagues off Dondrehead, may safely steer EbN. which will carry her 4 or 5 leagues without the Great Baffles; the currents being very changeable. Quere, whether they are not regular tides? Or if currents, a competent knowledge of their shifting may be in time procured: this will be the navigator's surest guide in the night. In the day, observation may be made by the land, and the course steered accordingly. This course will carry you 8 leagues south of the Great Baffles; which I take to be sufficient for the set of the currents to the northward: however, you should take care to sound from time to time.

You must still observe, that, though it is 20 leagues from Dondrehead to the Great Baffles; yet, when you reckon you have sailed 15 leagues, you will be opposite to it; several ships have even thought they had got no farther than 12 leagues. This observation is worth attending to, as well for shaping your course as for the distance.

The course from the Great to the Little Baffles is NE. and the distance 7 leagues. The English Pilot makes it NEbN. but in steering NE. you sail no farther from one than the other. When this reef does not break, the best mark to know whether you are near the Little Baffles, is a little hill on the shore, on which is a rock, resembling a chimney. This hill lies directly NW. of the Little Baffles. A little to the northward you see another hill not so high, with a small rock on the top of it, like a pagoda, from whence it derives its name. It is farther in-land than that of the chimney, and is not to be distinguished from the other little hills but by this mark.

CLI. *Of JULIUS NAVE, the POINT of LOW BANK, AGANIS, AREGAM, POAWEGAM and BATACOLA.*

Between the two Baffles, about equal distance from one to the other, there is a small bank, on which is found but 8 fathoms; but those who sail here need not fear to approach it.

From the Elephant to the high sandy point, called Julius Nave, is about 5 leagues NEbE. between them are two reefs, one near shore, and the other 2 miles off shore, upon which are 7 or 8 feet water. Within this sandy point is good \rightarrow ground.

The Point of Julius Nave lies NNW. of the Little Baffles. You may sail between them in 5 fathoms. You have 6 or 7 fathoms nearer shore, and 5 $\frac{1}{2}$ fathoms mid-channel.

From the point of Julius Nave to that of Low Bank, or Sandy Point, the course is NEbN. northerly, 16 miles. From this point a sandy bank extends four miles into the sea; so that you must take care to keep wide of it, whether in sailing from the Baffles or the northward. Between the two sandy points, that is to say, between Julius Nave and this point, the \rightarrow age is good in 12 or 13 fathoms.

From the Low-bank to Aganis the course is NNE. distance 16 miles. Aganis is known by a little peak that is near it, like a tower: northward of this peak there are two little hills near each other, and close to the shore a cluster of cocoa-trees, by which Aganis is known. In coming from Low-bank Point you coast it, at five or six miles distance, in 25 fathoms, sand mixed with coral. You have 15 fathoms within a gun-shot of the shore, which is bold.

From Aganis to Aregam, Arregame (or Arrewegamme) the coast inclines NbE. 4 leagues. This place is distinguished by two little hills in-land, at a small distance from one another, and also hath a cluster of cocoa-trees, but not quite so large as that of Aganis. They coast it in 22 or 24 fathoms.

From Aregam to Poawegam (Poawegamme or Tricule) is reckoned 4 $\frac{1}{2}$ leagues NbE. It is known by a grove of cocoa-trees, which inclose a pagoda. The land to seaward is low; in-land it is high and mountainous. There is a reef about a mile off shore. You must in this part keep in 22 fathoms, though it is not very good for \rightarrow , on account of rocks scattered in several places.

The direction of the coast between Poawegam and Batacalo is NbW. distance 8 leagues. To seaward between the two, the land is low; and up

in the country are some very high mountains, one of which is called by navigators the Capuchin, on account of its resembling at its extremity a friar's hood: but it makes only in this form while it bears from the west to the south. When it bears NW. or NNW. its peak is like the top of a great pyramid.

Two leagues off Batacalo there is a reef of rocks, on which there are uneven soundings. A small ship may sail between the land and the reef; but it is better to keep without. When the Capuchin bears SW. you may edge in towards shore, and \rightarrow over-against the river, a mile off shore, in 7 or 8 fathoms. Several cocoa-trees dispersed along shore facilitate the knowledge of this part: beside that, the land trenches from thence NWbN.

CLII. Of the unequal Depths EAST of the ISLAND ZELOAN and VENDELOOS BAY.

It is necessary to observe, that no regard should be paid to the irregular soundings in the part east of the Island of Zeloan. There are holes in several places. From 20 fathoms sometimes the soundings will suddenly come to 400 fathoms. It will happen sometimes, that being near shore, in 7 or 8 fathoms, you shall presently find yourselves in 40 fathoms. Those who coast this island ought to observe this; also the currents, for they sometimes set in shore.

From Batacalo to Vendeloos the course is NWbN. Vendeloos is a bay, on the north side of a point; it may be known by a small hillock, a little way in-land, called the Sugar Loaf, to the southward of which, at some distance, are two or three other little hillocks. At a gun-shot from the coast the depth is 8 or 9 fathoms, but very foul ground in several places; so that you must \rightarrow further off. The ships that have business at Point Pedra should from Batacalo keep near shore; otherwise they risque their being able to fetch in.

CLIII. Of PROVIDEDIEN ISLAND, COTIARIS POINT, TRINQUEMALE BAY, and PIGEON ISLAND.

From Vendeloos to the Island Providien is about 3 leagues NWbN. between these two the coast forms a bight. Here is exceeding foul ground. You must keep an offing of 2 $\frac{1}{2}$ leagues, in 16 or 18 fathoms.

The Island Providien is a white rock, like the sail of one of the country vessels. The ground continues foul for 5 leagues more to the northward.

From the Island Providien to the point of Cotiaris, or Coetier, the course is NWbN. distance 9 leagues.

Cotiaris

Cotiaris Point is low and even. About 2 or 3 leagues to the southward of it the \rightarrow age becomes better; but this not above two miles off shore, in 10 or 12 fathoms. From this point to about the middle of the bay, you find good \rightarrow age from 20 to 24 fathoms, but more towards Trinquemale: it is too deep to \rightarrow in.

From Cotiaris to Trinquemale Bay, (or Trinkamalay or Crankanella Bay) is about 3 leagues NW. This bay is large and deep, extending about 2 leagues. It has on the north side high land, and some good harbours, sheltered from all winds. The entrance of the bay is very clear, and without danger, though very deep. On the north side are two rivers and three toward the south. Trinquemale fort is in latitude $8^{\circ} 35' N$.

From the entrance of Trinquemale Bay to Pigeon Island, the course is NW. 4 leagues. There is no \rightarrow age between the two, on account of the great depth. From Pigeon Island to Cross River is 4 miles.

CLIV. *Of RIO-CARTY, MOLEWALL, POINT PEDRA, and KAREYCALL RIVER.*

From Cross River to Rio-Carty, (or Rio Sorto) the course is NW. distance about 4 leagues. The coast is low and even. You may \rightarrow four miles off shore, in 16, 18, or 20 fathoms.

From Rio-Carty to Molewall (or Passake) the distance is $5\frac{1}{2}$ leagues NW. You may \rightarrow between the two, there being very good ground.

From Molewall there is a bank runs out three leagues; come no nearer it than 9 or 10 fathoms. It is very shoal; to avoid it, you had better keep 4 leagues off shore; there you have 9 or 10 fathoms coral. When you are almost past this reef, the soundings are sand and shells, mixed with gravel and coral; and 5 leagues off shore, sand with a few shells. This bank being doubled, you must go to Pedra Point, and hawl in for the coast, where there is nothing to fear. Whilst you continue in 6 fathoms, sandy ground, you are still on the edge of the bank: if the bottom is ouze, you may keep within gun-shot of the shore, in 7 or 8 fathoms, the same ground; but you must keep a little off when near Pedra Point, because of the dangers that surround it.

From Molewall to Pedra Point, is reckoned 14 leagues NW. and NWbN. the latitude of Point Pedra is $9^{\circ} 42' N$. You may coast it, without failing farther off it, in order to shun a rock under water, which hath but 9 feet and a bank which lies off the coast, on which are very unequal soundings. The rock bears from Point Pedra EbN. $2\frac{1}{2}$ or 3 leagues.

In failing from the southward, if you meet with contrary winds, so that you cannot coast it at the above distance, you had better sail without the bank and rock. Keep 4 leagues offing, in 9 or 10 fathoms, till Point Pedra bears WSW. then stand to the westward, but nothing to the southward, till this point bears SW. otherwise you have unequal soundings, which decrease sometimes 2 fathom at a cast; instead of which you will find no less than 4½ or 5, by conforming to this direction. If by neglect you find yourself in 4 fathoms, sand and rocks, you must then hawl off, till the soundings are sand, mixed with corals and shells, in 5½ or 6 fathoms.

When Pedra Point bears SbE. 4½ leagues off shore, you may → there in 4½ fathoms fine sand. If you would approach the coast and are obliged to turn it, in standing off, take care not to bring the point to the westward of SW. nor standing on, more southerly than SSW. By this means you escape the danger.

The north part of Pedra Point is known by a church, and some houses built upon it; the land trenching to the westward.

Many observations, made at sea with great exactness, determine the latitude of Pedra Point, the extremity of the Island Zeloan, in 9° 42' N. Mr. Nicholson makes its latitude 9° 48' N.

It is reckoned 8 leagues WbS. and WSW. from Pedra Point to the point NW. of the Arnedien or Cardies, called the Fort of Hammon-Hiel. About 6 leagues from Pedra Point, you may see the NE. point of Arnedien. It is proper to keep 3½ leagues off it, on account of a flat bank, which runs a good way off, on which there is but 3 fathoms: keep this offing till Hammon-Hiel bears SEbE. and Cow Island (or Ilho de Sorto) SbW. and SSW. You must then steer by Cow Island till you get in 4½ fathoms good ground, and bring the fort of Hammon-Hiel to bear EbS.

In the months of May, June, and July, though the wind blows violently from the SSW. here are strong tides both of flood and ebb; so that even then you may turn it up.

Of the Coast from Point Pedra, the North Point of Zeloan or Ceylon, to the Entrance of the Ganges.

CLV. *Of CANIMERE PAGODA, NEGAPATNAM, and KERRY-KAL RIVER.*

From Pedra Point to the Pagoda of Canimere, the first point on the Coromandel Coast, the Coast is NW½N. distance 13 or 14 leagues; the depth in this

this track 9 or 10 fathoms. On approaching this point, it decreaseth to 5 fathoms. Come no nearer, because a bank projects about 2 leagues from Point Canimere.

The ships, that after coasting the Island Zeloan, by way of Molewall, cross from Pedro Point to the Coast of Coromandel, almost always make the land sooner than they reckon, because the currents set to the SSW. very strong and carry them into the bay NW. of Zeloan; so that many navigators, who, to get sight of the coast, have directed their course to the northward of Trankabar, have made the land to the southward of Negapatnam. Several have run ashore on this coast in the night-time, for want of having the prudence to sound: but navigators should not neglect such salutary council. The contrary hath happened to some; for they have been set to the eastward. The first of these examples is common, the second rarely happens.

The Pagoda of Canimere may be seen 5 or 6 leagues in clear weather. About $\frac{1}{4}$ of a mile to the northward is a little river, and on its bank a large village, encompassed with trees, where a trade is carried on in tobacco and rice: the mouth of this river doth not appear at a distance. Its bar hath but 3 feet water; so that only very small vessels can go into it. They \rightarrow about a league from its entrance, with the Pagoda of Canimere, SWbW. The ground to the northward is very soft and muddy, and consequently not fit to \rightarrow in.

From Canimere to Negapatnam, the course is north, distance $7\frac{1}{2}$ leagues. Between the two is seen a thick wood, having little bushes without number. There is nothing else remarkable but a church, about a league to the southward of Negapatnam. It is built beside a little river, which is not seen in coasting; and as there are not above four feet on the bar at high water, no farther notice is here taken of it.

Negapatnam is one of the most considerable places belonging to the Dutch on the Coast of Coromandel, and its fortifications are good. The town lies northward of the fort; to the southward is the entrance of a commodious river, capable of receiving middling vessels. To the northward of the town is a great pagoda, called the Chinese Pagoda, on which is erected a mast or flag-staff. You \rightarrow before Negapatnam in 5 or 6 fathoms. The bottom athwart it is very level: at four leagues distance you find but 6 or 7 fathoms.

From Negapatnam to the river Karey-Cal, are about $4\frac{1}{2}$ leagues, the course N 5° W. In coasting you keep in 6 or 7 fathoms. Between the two runs the river Naour, wherein a trade is carried on in chintz and rice. The mosque,

mosque, with four white pyramids, which may be seen a great distance at sea, renders this place remarkable.

Karey-Kal is a new settlement of the French. This, with the places depending on it (the most considerable of which is Teru-maley-zayen, four miles to the southward) was granted to the French, by the king of Tanjour, in 1739. Its latitude is $10^{\circ} 45' N$. It is considerable for its great number of Aldees, who are dependents, and also for the linen trade. Two rivers bend their course through this grant: they take their rise among the Gatta Mountains, on the Coast of Malabar, and thereby facilitate the carriage of the merchandise, rendering the country fertile, which abounds in rice and other necessaries.

The fort of Karey-Kal is built on the north side of the river: its mouth is formed by a narrow point of sand, which extends along the coast; its entrance being parallel with the shore, cannot be distinguished far off. The other river, named Tiroumala, or Tiru-malay, is a quarter of a league to the southward and opens likewise towards the north; as do almost all the rivers on this coast.

The bar which shuts up these two rivers, hinders middling ships from entering, so that only boats can pass it; and then it must be at high water. They \rightarrow before Karey-Kal in 5 or 6 fathoms. The marks for \rightarrow depend upon the monsoon in which you are there, viz. In the southerly monsoon, bring the flag-staff to bear WSW. and in the northerly, west. By this means you facilitate the passage of boats passing and repassing.

CLVI. Of TRANKABAR, CABRIPATNAM, TRIMINIVAS RIVER, COLORAN RIVER, PORTO NOVO, and FORT ST. DAVID.

From Karey-Kal to Trankabar, the distance is $1\frac{1}{2}$ league $N4^{\circ}W$. You keep along shore, in 6 or 7 fathoms; but in approaching the fort of Trankabar you must steep off a little, on account of a bank near the river. This bank doth not project much; and, provided you keep in the above depth, you have nothing to fear.

Trankabar is the chief settlement belonging to the Danes in India: the town is very neat, and the fort remarkable by its exceeding whiteness, which they take care to keep so. The Indians call this place Tirangampadou, whence is corruptly derived the name of Trankabar.

Two leagues and a half to the northward of Trankabar is Cabripatnam or Kaweripatnam, appearing like a sort of fort, without bastions: just by are

two small pagodas, very near each other, in-land. There was formerly, about half a league from this place, a small French factory.

The little river of Triminivas, on which stands the tower of Tiru-mala-wassel, is 2 leagues north of Cabripatnam. It takes its name from a pagoda that is seen in-land. Off its mouth there is a bank about a mile distant; but it is not dangerous, as the depth decreases gradually in approaching it. The land to the northward of the river is somewhat higher than the rest of the coast, which from the pagoda of Canimere is not seen, but the trees and buildings near it. In coasting about a league off shore you have 9 or 10 fathoms water.

About 3 leagues north from the river Triminivas is that of Coloran. Mr. Nichelson calls this river, Davecotta. This last discovers itself by thick bushy wood near the shore, through which one of the mouths of these rivers seems to make a passage: from thence extends a bank, the point of which reaches $1\frac{1}{2}$ league from the shore. It is steep to, and dangerous. From 12 fathoms you fall in some places suddenly into 3 or 4 fathoms. At the mouth of this river stands the town of Tirukotty, where the English have a fort encompassed by the river. A large ship that sails along this coast ought to come no nearer than 14 or 15 fathoms. In this track are to be seen, up in the country, four remarkable edifices. These are the four porticos of a famous pagoda, called Chalembarang or Shidam-barang, but Chalanbron, according to D'Anville: Mr. Nichelson has it Chillambrum. It bears due west of the opening in the wood above mentioned, and is easily found thereby.

The south side of the entrance of Coloran or Colderoon river, seems to form a point, especially when you come from the southward, and sail near it, because the coast, whose direction was hitherto north, forms an elbow, and extends $3\frac{1}{2}$ leagues to the NNW. as far as Porto Novo. The land is low and even, and nothing else is remarkable but the buildings above mentioned.

Porto Novo is an Indian town of great trade. Here the French and Dutch have factories or houses for trade, on which they hoist their flags.

As you pass the shoal off Coloran, to go to Porto Novo, you must bring the French and Dutch flags at Porto Novo to bear NWbW. before you steer by this point of the compass; that you may be sure you have doubled the north point of this bank.

In July, sooner or later, from Triminivas to Porto-Novo, the waters are thick and muddy, as an inundation: this is the more surprising, as it seldom rains on the Coast of Coromandel at this time of the year. This foul water
proceeds

proceeds from Coloran River, which takes its rise among the mountains of Gatte on the Coast of Malabar, where the frequent rains occasion this inundation, especially at Coloran, at which place is the greatest outlet of this river. Its other principal outlets are at Negapatnam, Karey-Kal, Trankabar and Triminivas.

From Porto Novo to Fort St. David, belonging to the English, the course is NbE. distance $6\frac{1}{2}$ leagues. In sailing along the coast you must keep a league off shore, in 8 or 9 fathoms. Half a league to the northward of Porto Novo begin the sand-downs, which extend along the coast. At a distance, this part of the coast resembles several islands: and this proceeds from these sand-downs appearing higher than the land behind, which is exceeding low.

Fort St. David is situate on the edge of the coast, and $\frac{1}{4}$ of a league to the southward, you see the town of Goudelours or Koodeleur. There is a small bank about $\frac{1}{4}$ of a league off Fort St. David. They \leftrightarrow in 7 or 8 fathoms.

CLVII. Of PONDICHERRY.

From Fort St. David to Pondicherry, the course is NNE. easterly distance 14 miles. At a league off shore, you have 8 or 9 fathoms. There is nothing remarkable between them. The land is sandy to sea-ward, and woody in-land. In sailing from the southward you see the town and fort of Pondicherry, at the foot of black land, a little higher than the rest of the coast. This black land, about 3 leagues in length, is NW. of the town, the fort, is built on low land by the sea-side.

Pondicherry hath been the chief of the French settlements in the East-Indies, and the residence of the governor general and head council. It is in $11^{\circ} 56'$ north latitude, and $77^{\circ} 34'$ east longitude from the observatory at Paris, and $79^{\circ} 57'E.$ from London. The king of Vafapour granted it to the French, in 1672, in consideration of services done him by M. Martin, who 2 years afterwards was appointed governor thereof. The prudent conduct of this officer preserved it for his king, in spite of the revolutions that happened in 1677, and some time after in Carnatte or Karnateka, by the invasion of prince Sivagy who confirmed the grant in 1680.

As soon as the declaration of war between France and Holland was known in India, the Dutch (jealous of this settlement, where the trade daily increased) became resolved to make themselves masters of it, and tried all manner of ways to supply the weakness of their own inability.

They engaged the Great Mogul to assist them in the attack; and fearing this ally would not prove sufficient, they sent to Ali-Raja, governor of the province, with many presents to win him to their interests, promising him a considerable sum for the subsistence of an army which they required of him. The negotiation had, at that time, no other effect than to induce M. Martin to take proper measures to defend the place; and he doubled his care in 1690 and 91, till the English joined the Dutch, and threatened to besiege and raze it to the ground. The Dutch not discouraged by the bad success of their first attempt, continued their solicitations, and in 1692 obtained a caoul, or recommendatory letter (as appears by the original treaty) from Raja-Ram Sacrapatti, king of Gingy, who permitted them to attack the French in Pondicherry with their utmost strength, as well by land as sea, in order to reduce the place; with a promise, on his part, to assist them (at the Dutch company's expence) with a sufficient force of infantry and cavalry for the enterprise.

This prince on his part contracted (after the conquest) to yield them up the fort of Pondicherry, with the lands therto belonging, to enjoy and possess them in the same manner as the French had done; besides all the effects, gold, silver, and other merchandizes they should find there, with the remittance of all the rights that Raja-Ram could claim therein.

He farther engaged, for himself and his successors, to establish and maintain them in their possession, and to succour them with all his forces against any who should hereafter attempt to molest or disturb them in it.

The Dutch on their part obliged themselves to pay this prince the sum of 21,000 pagodas (178,500 livres, or 7437 pounds sterling) half to be advanced; and the other half on the reduction of the place.

This caoul was confirmed by another king of Gingy, called Pralada Niragi, of the Bramin's cast. All these negotiations cost the Dutch above 50,000 pagodas.

With this permission they armed for the execution of their design. In 1693 they presented themselves before Pondicherry, with a force capable of attacking the strongest place in the Indies. Their squadron was composed of 19 men of war, several sloops, boats and country vessels, having on board above 1500 regular troops, besides seamen, boughies, macassars and chingalas, to the amount of above 2000; 15 or 20 pieces of brass cannon, 18-pounders, 24 field-pieces, 6 mortars, and warlike stores in abundance. This army was increased by another from the king of Gingy. This great preparation was attended with a favourable success. The defence of Pondicherry at that time consisted

consisted in a brick wall, of an irregular form, 238 fathoms in circumference, which inclosed the magazines and apartments of the principal factors; 4 small bastions, able to mount only 6 guns, flanked the curtains. This place was attacked and defended with vigour; but after about a month's siege M. Martin was obliged to surrender it to the besiegers. It was afterwards restored to the French by the treaty of Ryfwick; and this same governor again took possession of it, in 1699, in the name of the French company, who immediately gave him orders to see it fortified. They sent him M. de Noon, in quality of chief engineer, and from his plans and designs they began in 1701 to build the citadel. It is a regular pentagon of 90 fathoms round the exterior polygon, strongly built with brick, with a ditch full of water, 10 fathoms wide, and well covered. The bastions are built with orillons, and port-holes in them, and with barbets on the flanked angles. The royal gate fronts the sea; it is ornamented with a beautiful piece of architecture. This fort may be considered as the best of its kind in the East Indies. It stands in the middle of the town, by the sea-side, and the houses extend north and south.

In 1724, M. de Beauvoillier, who was governor of it, began to inclose the town. Father, Lewis, a capuchin, had the management thereof. It consists in a brick wall, flanked with bastions, in the modern way. In 1740 and 41, under the government of M. Dumas, these fortifications were augmented, by the care of M. de Cossigny, an engineer of reputation and merit, on account of the Marattas, who threatened to destroy the town. Their army, assisted by that of several other Gentoo princes, amounted to above 150,000 men. After having conquered the Moors or Moguls, and ravaged all the province of Carnatte, they purposed to treat the Europeans settlements in the same manner, especially Pondicherry, the governor of which had afforded a retreat to the Mogul's viceroy, with his family, and the remains of the army after their defeat. The care that this prudent commander took in putting the place in a condition of defence, the resolute courage wherewith he answered the Mahratta generals, and the solid arguments he made use of to represent to them the injustice of their pretensions, made the officers and soldiers not only to change their purpose; but their chiefs sent the governor a siraph, or serapah, a present that consists of a complete dress of silk and gold in the country fashion, being a mark of esteem and friendship to those on whom it is bestowed. This news restored tranquillity in Pondicherry.

This town is now one of the strongest places in the East Indies. It is 3000 toises, or 1½ league in circumference. It was besieged by Admiral

Boscawen

Boscawen in 1749; but he was obliged to raise the siege on account of the monsoons. It 1760 it was blockaded at sea, by the Admirals Cornish and Stephens, and Colonel Coote by land, and obliged to surrender at discretion; the garrison being short of provisions. This place was afterwards totally demolished, as the French had done by fort St. David's; but was restored to them again by the peace of Paris in 1763. It has been lately taken by the English. This last acquisition has been made chiefly through the intrepidity and bravery of the officers and servants of the English East-India company. Here is a mint, where they coin rupees and pagodas, which are superior in fineness to many others, and are current all over India. This privilege was granted to M. Dumas, in 1736, by a phirmaund or letters patent from Mahomet Scha, emperor of the Moguls. This prince, a few years afterwards, honoured him, and his successors in the government of Pondicherry, with the dignity of Nabob or Viceroy, and committed to him the command of a manseb or battalion of 4500 horse, in acknowledgement of the refuge he afforded his subjects in Pondicherry during the incursions of the Mabrattas in Indostan above mentioned.

They \rightarrow in Pondicherry road, in 7 or 8 fathoms water, 2 or 3 miles off shore.

CLVIII. *Of CONJIMERE, ALEMPARVA, SADRAS, the SEVEN PAGODAS, COUVELAN, and MELIAPOUR.*

From Pondicherry to Conjimere, or Kottemerye, the coast runs NNE $\frac{1}{2}$ E $\frac{1}{2}$ leagues. Between them are sand-downs, along the coast; behind. The black land before mentioned, gradually decreases and terminates about a mile to the southward of Conjimere, which is only remarkable by the ruins of a factory, abandoned by the Dutch, after 3 or 4 years residence. You find also the remains of an old English inclosure abandoned also.

The \rightarrow age is very good opposite this place, in 6, 7, or 8 fathom water, about two miles off shore.

From Conjimere to Alemparva the course is NE $\frac{1}{2}$ N. distance 5 leagues. About a league beyond Conjimere you perceive a thick wood and a village: then the coast appears lower, and seems to bend in a little, 'till you come near Alemparva, where the south side of the river rises in sand-downs, and projects a little; otherwise, this point is not dangerous, and in passing it the depth diminishes but a fathom. The N. side of the river is covered with trees.

Alemparva

Alemparva is distinguished by a beautiful fort, flanked by many turrets, belonging to the Mogul; its whiteness renders it conspicuous at a great distance. There are also several hillocks on the land.

From Alemparva to Sadras (a Dutch settlement) is NEbN. distance 7 leagues. The country between is partly flat, sandy, and but few trees, 'till within 3 leagues of Sadras, where begins a thick wood of palm-trees, extending about a league northward. At its northern extremity is a small pagoda and an English Factory, opposite to which is a little spit of sand, which runs out $\frac{1}{4}$ of a league to seaward. Two leagues further to the northward you find Sadras; and at the entrance of a thick wood, the Dutch factory. There are two pagodas, but not very discernable, one to the southward, and the other to the northward. Two or three leagues up in the country you see several little hills, called by navigators the Mountains of Sadras. When the highest of these bears NW. Sadras bears west. About 4 miles off shore are 9 or 10 fathoms water.

About 2 leagues NEbN. from Sadras are the Seven Pagodas, which are only to be seen near the shore. There are five upon high and steep rocks within land, the tops of which can only be seen, by reason of a thick wood that hides them: another is so near the shore that the sea washes the foot of it: the seventh hath been destroyed by the sea; it stood on a rock an eighth of a league from the shore.

From the Seven Pagodas to Couvelan or Covolam, is 16 miles NbE $\frac{1}{2}$ E. In this passage are some rocks which bear ESE. off the little hill of Tripoulour, remarkable by being much nearer the shore than any of the others. These rocks project about a mile into the sea. You may coast it in 9, 10, or 11 fathoms, about 4 or 5 miles off shore.

From Couvelan to Meliapour or St. Thomas, is reckoned 5 leagues, NbE. The town is by the sea-side, and nothing but a heap of ruins. There are some churches, especially a cathedral, the see of the bishop, suffragan to Goa. All the Portuguese churches on the coast of Coromandel are in his diocese.

Mount St. Thomas lies half a league to the westward: it is distinguished from many others round it, by a church built on the top of it, which is easily seen in sailing along shore.

CLIX. *Of MADRAS or FORT ST. GEORGE, the REEF of TRIFOU, the BANK and RIVER of PULLICATT.*

From St. Thomas to Madras is a league NbE. This town is the chief English settlement on the Coast of Coromandel, and the seat of a superior governor
and

and council. It is encompassed with a wall of brick, flanked with bastions and supplied with cannon. Several alterations have been made here, since it was taken by the French, and was restored by the peace of Aix-la-Chapelle. A little river, whose mouth is to the southward of the town, and which forms an elbow in running to the northward, surrounds most part of it.

Madras is divided into the white and black town. The first is very small, but well built; the latter lies to the northward of it, and is the abode of the Gentoo merchants, Moors, Armenians, Jews, &c. and some Europeans, who cannot dwell in the white town. The black town is not quite encompassed with walls like the fort.

A number of ships are always seen in the road. The \rightarrow age is about 2 miles off shore, in 10 or 11 fathoms water. There are in-land some high mountains. The latitude is $13^{\circ} 13'$ N. and longitude $80^{\circ} 32'$ E. from London.

From Madras to the reef of Trifou or Natoer, the course is NNE. 3 leagues. You may know when you are near it by a small cluster of trees of equal height, and whose top resembles a kind of table. When this wood and two palm or cocoa-trees are in one, you are athwart this reef, which projects a good league into the sea. Having opened the two trees, with the little wood a sail's breadth, you must steer NE. to keep clear of the bank which lies off Paliacata, or Pallicatt, the southernmost part of which bears NEbE. 2 miles from the pitch of the reef.

Keep the lead constantly going, because, as you come near the bank of Trifou, the depth diminishes a fathom at each cast, as fast as you can heave the lead: so that by day or night, as soon as you perceive this decrease, you should immediately stand off, as above, to give the bank of Paliacata a good birth, and not near it in less than 10 fathoms. Without this attention you will find unequal soundings, from 6 fathoms to 3 at one cast of the lead, which will be exceeding dangerous for a large ship; but a small one may sail throughout without fear, because there are at least 12 feet water over the shoalest part of this bank. It lies 2 or 3 miles off shore.

The bank of Paliacata extends NEbN. and SWbS. Those ships that sail 3 leagues distance from the coast need not fear these two banks.

To \rightarrow before Paliacata, you must not stand in for the land, till the flag-staff of this factory bears WbS. So may you safely approach it; and will find 6, 7, or 8 fathoms water. This should be understood in case of a southerly wind. If it should be northerly, you must bring the flag-staff to bear SW. especially in a ship that draws 16 feet water; for in a small vessel, of 9 or 10 feet draught, there is nothing to fear from this outer bank. It is necessary

necessary that those who are not sufficiently acquainted with this coast, should be upon their guard, in both these respects.

The north end of the bank lies SEbS. from the river Paliacata. Two miles to the southward of this river is Guelde Fort, belonging to the Dutch. The common $\frac{1}{2}$ age is EbS. from the flag-staff, in 5, 6, or 7 fathoms water.

The course from Trifou to Paliacata is NNE. distance $5\frac{1}{2}$ leagues. The coast between them is low to sea-ward: the in-land part is high land, called by navigators the Mountains of Paliacata. This place lies in latitude $13^{\circ} 35' N$.

CLX. Of CIRCARA-HOERIA, ARMEGON, CALETOER, DIVELAN, CERARA, GONDEGAM, MONTEPOLY, and PETAPOLY.

From Paliacata to Cicara-Hoeria, or Sikari-hori, the coast runs NbW. 8 leagues. Near this place is a reef like that of Trifou, which runs as far as that into the sea, but farther along the coast. At the NE. point of this reef there is another, at two or three leagues distance from the coast. It is about 10 leagues long, north and south, and the soundings on it are very unequal. To go to Armegon you may go between these two shoals; but you must be experienced herein, or else it is better not to venture. You find between the coast and this bank a large and exceeding fine channel, which extends NbE. and SbW.

To sail with a fair wind from Paliacata without this reef, you must keep off the coast, steering NNE. along the reef, and come not under 8 or 9 fathoms water. If you get into 12 fathoms, you must edge in again to 9 fathoms. This is absolutely necessary for those who go to Masulipatnam, because, in June, July and August, the currents set NE. and even sometimes more easterly. If you keep too far off, you would run the risk of losing your passage, as has happened to several ships, that have not been able to fetch nearer than Narapour, and from thence have turned it, but with great difficulty, to reach Masulipatnam.

It is reckoned 26 miles from Cicara-Hoeria to Armegon. The trenching of the coast is something more westerly than in the preceding paragraph. Within land may be seen Mount Armegon: when it bears west you may perceive a little to the southward, near the shore, the ruins of an old English factory, and to the SSW. the mountains of Paliacata.

From Armegon to Caletoer the coast runs north, somewhat easterly, $6\frac{1}{2}$ leagues; but the course to pass without the bank of Armegon is NNW. in 10, 11, or 12 fathoms water.

S

From

From Caletoe to Divelan the coast is north, and distance 10 leagues, that is to say, 7 leagues from Caletoe to Point Peny, and 3 leagues from Point Peny to Divelan. From Caletoe you must sail in 16 or 17 fathoms, and come no nearer, on account of a dangerous bank, which lies 4 leagues north of Caletoe, and projects 4 miles out. This bank is very shoal, and consequently the more dangerous.

The Sieur de la Touche, in his memoirs, relates an event which happened to him off this bank, and which is not improper to be inserted here. Being at 4 off it in 25 fathoms, he prepared in the night-time, with a favourable wind, to make a trip NW. and regain the depth of 13 or 14 fathoms. Though the wind was moderate, and he had got but a little way, in less than a quarter of an hour he fell from 15 to 5 fathoms: this obliged him to hawl off immediately. On heaving the lead, and finding the second time 15 fathoms, he imagined he might be deceived in the founding. He hath since learned that this bank shoals from 15 to 5 fathoms. You should in common prudence keep upon your guard in this part: observing to keep in 17 fathoms, you have nothing to fear.

Six leagues NbW. from Divelan is Cerara or Carera: you may coast it in 8, 9, or 10 fathoms. To the northward of Cerara are two very thick woods; and in the town a white pagoda. Within land are some high mountains, which shew themselves 10 or 12 leagues at sea, in clear weather.

From Cerara to Gondegam the coast trenches NEbN. : N. 6 leagues. Along this coast runs a bank, projecting a little into the sea, and without it another; but small vessels may pass within it: neither of them is dangerous for large ships, that keep in 9, 10, or 11 fathoms. In approaching the river you perceive a village with a pagoda on the sea-side.

From Gondegam to Montepoly, the course is NE. distance about 4 leagues. You may coast it at a league distance in 9 or 10 fathoms, ouze. East of Montepoly is a grove of palm-trees, and a little farther another less, consisting only of 20 or 30 trees: this last seems higher than the other. When you sail along the coast, in the depth above mentioned, you go within the bank of sand, which lies 5 leagues SEbE. from Montepoly: it is 8 or 9 leagues long, NE and SW. On the SW. part of it (which is the shoalest) there are no less than 3 fathoms. The approaches to this bank are known by a sandy bottom; instead of which, in the channel, between that and the land, the bottom is ouze.

From

From Montepoly to Petapoly the course is ENE. 6½ leagues. About a league westward of the town runs a little river, and opposite the town is a grove of palm-trees, remarkable for its being flat and even, for which reason it is called the Table of Petapoly.

CLXL. Of POINT DIVY, MASSULIPATAN, and NARSAPOUR.

From Petapoly to Point Divy the coast runs east, about 14 or 15 leagues. You must keep in 6 or 7 fathoms, 2 or 3 leagues off shore. About 4 leagues east of Petapoly there are the entrances of several rivers, that run along the low land, and form islands of it; but are not perceptible to those who sail along shore. These rivers ebb and flow. A navigator hath observed the water here to rise and fall 4 feet, being at an \leftrightarrow in 5 fathoms ouze.

On the west coast of Point Divy, at 4 or 5 leagues distance, you perceive the entrance of 3 rivers.

In sailing from athwart Divelan (the mountain of Cerara NWbN.) to go clear of the bank of Montepoly, you must steer NE. Take care to keep in 10 or 12 fathoms, stiff ground, and there is nothing to fear; but if the depth increases, and the bottom becomes softer, edge in, and shape a course to the eastward of Petapoly, in order to get into 9 or 10 fathoms ouzy ground.

To go to Massulipatan (or Masulipatnam) when you are off Point Divy, at 2½ leagues distance, you must keep in 8 or 9 fathoms, to avoid the bank of Divy. When Point Divy bears west, you must round it in 7 or 8 fathoms, and steer NNW. borrowing more or less from the westward, according as you find yourself nearer or farther from the shoal; then edge away by little and little, in 5 fathoms ouze, always avoiding the hard ground. When the depth exceeds 6 fathoms, you must borrow more from the west, and steer thus as far as the road of Massulipatan, before which you \leftrightarrow in 4 or 5 fathoms ouze, at 1½ league off shore.

The coast to the northward of Point Divy is low land, level, and without trees. Along this coast may be seen the mouths of two rivers. Near Massulipatan you see a tuft of palm-trees, about a league to the SW. These palm-trees in coming from the SE. seem to form only one great tree; but may be seen separate as you approach.

Without this mark, Massulipatan is easily distinguished by the houses and flag-staffs of three nations, English, French, and Dutch. To the northward of this town there is a wood cut even, the trees whereof are of an equal height. All the bottom of Massulipatan bay is ouze, except near shore. The depth doth not decrease above half a fathom for a quarter of a league.

It hath been observed above, that if you are bound to Massulipatan in the westerly monsoon, it is necessary to keep soundings near the coast, whether sailing within or without the banks of Arnegon and Montepoly. This holds good from the month of May to October; but in February, March and April, as the winds in general blow between the east and south, you must steer for Narlapour, or more to windward if possible, in order to give the bay of Petapoly a good birth, whence you cannot but with great difficulty get out without the help of westerly winds, which you must wait for.

In May you may shape a course between Massulipatan and Narlapour, because the winds vary then from SSE. to SW. and sometimes as far as WSW.

In October, November and December, here is but little navigating, nor indeed all along this coast. In the months of December and January, if you are at the bottom of the coast of Coromandel, you cannot return, because the NE. winds and currents, that run to the southward, are then in their greatest force.

From Massulipatan to Narlapour the course is EbN. distance from the town 13½ league, and from the road 12 leagues. The coast between the two is encompassed with a bank, that projects half a league. Opposite the river of Narlapour is another bank, about a league from shore. There are on the bar of this river 8 or 9 feet water.

Some charts place a bank 3 leagues south of Narlapour: this some describe rocky, and others soft; and upon it not less than 3½ fathoms water. All the navigators, who have sailed to Massulipatan, mention nothing of this danger in their journals, though the major part, by track, have run over it. If its existence is real, you may prevent the dangerous effects of it, by keeping your lead going; which you must always observe in these parts.

CLXII. Of POINT GODVARIN, NARSIPELLE, VATARE, BIMELIPATNAM, TICACOEL, CALREIGAPATNAM, and ALESARE.

From Narlapour to Point Godvarin or Gordware, the coast runs east (or rather EbN.) 13 or 14 leagues. About 8 leagues to the eastward of Narlapour you see 2 white pagodas, which you should take care not to confound with those which are a league west of Godvarin Point. To the eastward of these pagodas is the river Vifferon. Several navigators mistake herein, for want of observing that these last are 3 in number. In sailing from the westward, you should approach the bank of Godvarin but in 12 or 16 fathoms; because it is steep, and has unequal soundings on that side. Those who come from the eastward, and go to Yanaon, may pass it easily in 6 or 7 fathoms, sandy ground; but come no nearer.

The

The ships that sail from Narlapour generally keep 3 or 4 leagues from the coast, in 16 fathoms, to avoid this bank. This precaution appeared to me very prudent.

From Point Godvarin to Narfipelle or Narfpyle, the course is NWbN½N. 8 leagues. This place is upon an island, between the entrances of two rivers. The directions in the English Pilot tell us there is on each side a reef, that projects at least 4 miles; and that you may borrow on it to 6, 5, or 4 fathoms, but no nearer.

Between Narfipelle and the Point Godvarin, 1½ league from the latter, is the mouth of the Yanaon river, on which the French have a factory for the Callico trade; and 10 miles to the N. eastward is a pagoda of Corango.

The mouths of several rivers meeting in this bay form several islands, with spits of sand which run 4 miles out. There is no danger if you round them in 5 fathoms.

Point Godvarin and Vatare (Watare or Watfare) bear off each other north and south 10 leagues. The mountains on the Coast of Gergelim and Orixa begin in this part. Vatare is known by a mosque built on the top of a hill.

Having doubled Godvarin Point, you may perceive Visigapatnam (or Visigapatam) one of the chief European settlements. This place belongs to the English. It bears from the former NE½N. distance 24 or 25 leagues. Between them lie Panary and Pandy; the former ENE. 20 miles from Watfare, and is known by a small hummock on the strand, to the westward of which is a small bay, and a creek for boats. The latter is about 2 leagues farther, and is known by some great rocks above water, about a musket-shot from shore. You may keep about 2 miles offing, in 10 or 11 fathoms.

Visigapatnam distinguishes itself by a great steep hill, at the foot of which the sea breaks: to the northward thereof is a little bay, where you may ⚡, but nearest the north shore. On the south side of the great hill is the entrance of a river, and another to the northward of a little hill, on which is seen a small white pagoda, which is not discovered in sailing from the westward, till you have passed the great hill.

From Visigapatnam to Bimelipatnam (or Bimilipatam) the coast runs NE. 4½ leagues. It is known by a long mountain, which runs in-land, from the sea side. You perceive also upon the shore a little hill, about 2 leagues to the westward of Bimelipatnam, like a sugar-loaf: when you have passed it, you may see the Dutch factory on the west side of the river. You may anchor there in 6, 7, or 8 fathoms, soft ground, the factory bearing WbS. To lie on the other side of the river it must bear SW.

From

From Bimelipatnam to the river of Conar or Canary, the course is NEbE. distance 8 miles. In coasting you keep in 6 or 8 fathoms, and 9 fathoms at farthest: this carries you clear of the rocks.

From Conar river to the point of the same name, the coast runs NNE. 4 miles. To the eastward of Conar you see a thicket of palm-trees, SEbE. 2 leagues from which, are the rocks of Conar or Santipelly. If you would sail between the main and these rocks, the best channel is to keep in 7 or 8 fathoms; but at farthest, no more to seaward than 9 or 10 fathoms, nor nearer the shore than 5 or 6 fathoms.

If you intend to sail without this danger, you should not come nearer than 16 or 17 fathoms. In this case the surest way will be to keep in 20 fathoms, which will carry you 2 leagues wide of these rocks; near which the currents set strongly on them.

From the point of Conar to Ticacoel or Chicacol, the coast trenches NE½E. distance 34 miles; the land between them forming somewhat of a bight. Chicacol is by a river, near which are 3 or 4 great trees, and some palm-trees. You may keep 1½ league offing, in 13 fathoms, sandy ground.

From Chicacol to Calreigapatnam or Calingepatam, the bearing is NE. distance 13 miles. This place is known by 3 or 4 great trees to the northward. You have 13 or 14 fathoms a league from the shore.

From Calreigapatnam to Caletaer (Alesare or Aleture) the bearing is NE½E. distance 19 miles. The depth is the same as above mentioned, at an equal distance from the coast. You see between them 2 thickets, each consisting of about 10 or 12 palm-trees.

CLXIII. *O/PONDY, BARVA, SOMMAVERON, KARAPAR, and MANIKPATNAM.*

From Caletaer to Pondy, the coast trenches NE. easterly, distance 5½ leagues. The depths are 12, 15, and 17 fathoms, at 1½ league from the shore, sand mixed with large gravel. Close in shore, before the river of Pondy are 10 or 12 rocks, and within land some high rugged mountains, which thwart the river; those along the coast are of a middling height, but equally rugged.

From Pondy to Barva or Barrar, the bearing is the same as above mentioned, and the distance 5 leagues. To sail from one to the other, keep about 4 miles offing, in 15 or 16 fathoms, sandy ground. The mountain of Barva is high, and round it are some hillocks; the most remarkable is to the southward of the river. To the northward of the mountain are several others like it; but somewhat higher.

From

From Barva to Sommaveron or Ganjam, the coast inclines to the NE. E. distance 8 leagues. You must keep an offing of 2¹/₂ leagues, in 20 or 25 fathoms; nearer, the soundings shoal very fast. To the southward of Ganjam river, is a thicket of palm-trees, that seems to be of the extent of a cannon-shot. On approaching it, you discover another, even at the top, like the table of Petapoly; and to the northward, 5 tops of hills, making 5 saddles. Near this river is a little fort.

From Sommaveron to Karapar (or Kampare) it is reckoned 6¹/₂ leagues NE. E. There is nothing remarkable between them but the 5 tops of hills above noticed, and the pagoda of Montercotta, which stands by itself, upon a moderate low land, woody and pretty even. A fort called Monterkotta is said to be upon a small round hummock, on the south side of the river (Campare) which is the utmost bounds of Golconda. Three leagues NE. of this pagoda appears the mountain of Karapar; when it bears NNE. it may be known by its shape, being like a long tomb, a little steep on the side next the shore, towards which it declines. The more in-land hills run off in the direction of the coast. This different direction makes the mountain Karapar form an angle with the others, towards the NW. between which, to the southward, a plain extends as far as the 5 tops of hills above mentioned.

From Karapar to Manikpatnam or Manicapatam, the bearing is NE. E. E. distance 9 leagues. The coast makes a bay between them; in which there is no good anchorage ground, but about 3 leagues to the southward of Manikpatnam. This bay ought to be avoided, especially with a SE. wind.

From Karapar, the mountains that go no further to the northward, leave between them and the shore, a plain of reddish soil, especially near the sea-side. Off Manikpatnam a bank of sand projects 2 miles: it shoals from 10 fathoms suddenly to 4 fathoms, so that you must come no nearer than 12 fathoms. The soundings, a league from the shore, are sandy; and muddy at 2 leagues. Manikpatnam may be seen when the Mountain of Karapar bears WSW. 7 or 8 leagues. It is known by a little pagoda, encompassed with houses and other buildings, with some large trees.

CLXIV. Of JAGRENAT PAGODA, the BLACK PAGODA, FALSE POINT, and POINT PALMIRAS.

From Manikpatnam to Jagrenat or Jakaranat, the course is ENE. E. distance 5 leagues. There is no danger along this coast; therefore you may keep at what distance you think proper. The depth is the same as above mentioned,

mentioned, and the land of the same colour. Jagrenat is one of the most celebrated pagodas of India. Here is a large town about two leagues from the sea-side; the height of its building shews it far off. As soon as you are off Manikpatnam, you may perceive the pagoda from the masthead: at this distance it appears like a large ship under sail; but on approaching it, it looks like three pagodas, near each other. The SW. one is exceeding high and round, finished aloft with a large ball on the top of a spike. The second, which almost joins to the first, appears less round at the top. It has also a spike and a ball, as has likewise the third, which is the least, and round like the first. These three pagodas form a high and large building. P. Noel, by astronomical observation, made its latitude $19^{\circ} 50' N$.

Four leagues Ebn. of Jagrenat pagoda, is the Black pagoda, which at a distance (like the former) resembles a large ship under sail; but on a nearer view it loses somewhat of its magnitude. When you bring it to bear NNE. it looks like two buildings joined at the bottom, and separate aloft, which finish in a peak. About a league WbS. there is another little pagoda, situate like this on an even ground, reddish and without trees. This circumstance is sufficient to distinguish the Black Pagoda from that of Jagrenat. About a league WSW. of the little pagoda, you discover, between Jagrenat and the Black Pagoda, a rising ground, with some trees thinly planted: and though there is another nearly like this, at a league beyond Manikpatnam, you cannot mistake them, if you observe never so little the distance of the one from the Black Pagoda, and its different appearance from that of Jagrenat.

From the Black Pagoda to the False Point is reckoned about 18 leagues, the first 5 leagues Ebn. the next 3 ENE. and the last 10 leagues NE. The coast between these two places is encompassed with a bank, which projects half a league into the sea, and in some places a little less. Off false point it extends 1 $\frac{1}{2}$ league. The 4 first leagues the land is pretty even, and without any thing remarkable: the 4 following leagues it appears in downs or hillocks of sand; at the end of these 4 last leagues runs the river Marsapour, near which is seen a small thicket. Three leagues to the northward there is another little river. The coast concaves a little between the two; it is very low, for 3 leagues more northerly. Afterward it appears higher, by reason of a thick wood, that makes it appear more so than any seen from Manikpatnam.

Upon approaching False Point or Karreagazan, you would take it (although it is the main land) for a little island, by reason of a default of wood, or the entrance of a river. This part, which appears separated, is the False Point.

From

From this place the coast (whose direction was NE.) stretches to the northward, and more westerly, forming a great bight. Many navigators, deceived by this appearance, have taken False Point for the Point of Palm-trees, or Point Palmiras; and this mistake hath occasioned the loss of several ships. The knowledge of the depth alone, is not sufficient to prevent this error. Upon the easterly border of the bank of False Point, you find, for 2 or 3 casts of the lead, the same as at Point Palmiras; and the bottom, of a muddy sand, gravel and small flat stones, black, and without shape, like bruised pepper; but with this difference, that at the False Point you are but 2 leagues from the land, in 15 or 16 fathoms, and may discern the coast plainly, appearing like a regular hillock. At Point Palmiras, you find this depth only to the east of its isle, and at 4 leagues from the coast, which being much lower is hardly seen; 3 downs of sand, a little to the southward, are the only elevations it hath.

When you come from sea-ward to make False Point directly, you do not see the marks before mentioned, except a thick and even wood, which has nothing of the kind near it, and which is the principal mark. Having sailed about 4 leagues from False point; when it bears SW. there is to the NE. an opening, like the entrance of a middling river.

Off False Point, in 14 or 15 fathoms, the course to attain the same depth (to the eastward of Point Palmiras) is NE. 18 leagues; but you must allow for the ebbing and flowing of the tides: they are SE. and NW. The best depth is to keep in 14 or 16 fathoms, soft ground. If in this track you should find a different bottom, you need not be surpris'd. About 5 leagues NEbE. from False Point, steering NE. soundings have been had of red sand, for above 3 leagues, and from thence ouzy, as far as Point Palmiras. The change of the sand shews you ore near the bank, which is fine and hard sand. East and west of this bank, the soundings are sand, gravel, broken shells, and stones without form, like bruised pepper. You often find, in 17 or 18 fathoms soundings of black and red ouze, with broken shells. Near the land, in 11 or 12 fathoms, it is sand and red gravel. When in the night time you find these last soundings, you may round the bank, steering N. and NbW. When in this course you find soft ground, you may easily know whether the bank is doubled, because in such case the depth decreases but a fathom and a quarter for the space of a league. On the contrary, it decreases very quick when it is not doubled. If the winds blow from the westward, you may lie close to the bank, in 10 or 11 fathoms, without fear. You have then soundings of
T
fine

fine sand, frequently mixed with fine gravel: sometimes they are unequal, as from 10, to $7\frac{1}{2}$ fathoms. You must beware of coming into 5 fathoms; for then you approach very near the border of the bank, and the rocks appear distinctly upon the shoalest part.

Be careful not to keep too far off the bank, during the western monsoon, because you run the risk of losing soundings, by the winds which then blow from that part, and by the currents then setting to the eastward. If this happens, you must lose your passage, and will be obliged to go to winter at Chittigong, whence you cannot get out till November or December.

When the winds blow from S. to SE. (as it often happens in April, May and June) you may keep in 16 or 17 fathoms, till you have doubled the outermost part of the bank.

The Island of Point Palmiras is very discernable in coming from the southward, appearing very far apart; though not above half a league at most. If you are got down within the bight, between False Point and this island, so that it bears to the eastward of north, you must hawl directly off, to keep clear of an elbow of the bank, which runs out 2 leagues to the SEbE. of this island. You may approach it in 12 fathoms; but come nothing under.

In case of a southerly wind this instruction is more useful than before because then you will have the greatest difficulty to clear it. The *Sieur de la Touche*, in his *Memoirs*, speaks of a bank, bearing EbS. 9 leagues from Point Palmiras, on which he was told a ship had been lost. A Danish captain assured him he had seen this bank when dry, and that, having been carried off the coast by a gale of wind, the depth increased upon him to 60 fathoms and afterwards diminished by little and little to the sight of it. This bank hath been searched for accordingly, but could not be found; therefore it cannot be amiss to keep the lead going.

CLXV. *Of BALLASORE ROAD, the NELGRINGE MOUNTAINS and PIPLY ROAD.*

Having doubled the bank of Point Palmiras, when the island bears WbS. a little southerly. the best course to go to \rightarrow in Ballasore road, in 5 fathoms at low water, is NNW. about 9 leagues. The navigator should be careful to observe which way the wind blows, in order to be sure of his course, because in the westerly winds you must keep your luff to avoid falling to the leeward of Ballasore Road. You must therefore keep the coast on board, in 7 or 8 fathoms; but you may approach Ballasore Road in 6 fathoms. You meet no danger

danger in this bay, but the bank of Canaca, which breaks at low water, and on its edge has 5 fathoms, hard sand. The west coast is planted with trees, all along; except for the space of a small league to the westward of the river. This part, void of trees, serves to shew the entrance of it, which has on the west side a little white house (the English bankshall or storehouse). On the east side are some sand-downs, behind which you see plainly a little wood, when you go too far to the eastward of the entrance.

The marks for good \rightarrow age, when the Nelgringe or Nellgare mountains are to be seen. 1st. The end of the long mountain to the south westward of the others W $\frac{1}{2}$ S. 2. The middle one, which appears the highest, and is separate from the rest, WNW $\frac{1}{2}$ W. 3d. The little one on the NE. side NWbN. The entrance of the river north, and NbW.

It flows in Ballasore road, at full and change SSE. and NNW. The sea rises here 10 feet in the spring, and 7 in the neap tides. The ships that intend to \rightarrow in 5 fathoms, at low water, ought to pay great regard to this.

If in cloudy weather (when the Mountains of Nelgringe cannot be seen, and the entrance of the river is hardly to be distinguished) you seek the 5 fathoms (because in this depth you are at least 4 leagues off shore) you must have recourse to the marks already mentioned, namely, the void of trees to the westward, and the downs which lie along the eastern bank.

It is reckoned about 9 leagues EbN. and ENE. from Ballasore Road to Piply Road. In this track you keep in 6 fathoms; at low water. Piply is known by a pagoda to the westward of the river, and a thicket of trees very near it, which are sufficient to distinguish it. If you can see the pagoda, you must bring them to bear NWbN. to get into good \rightarrow age. If in a small ship you coast it in a less depth, you must take care of a bank opposite the river, which projects 4 miles off the coast. It is computed about 4 leagues from the \rightarrow age of Piply to the first brace or channel to enter the Ganges.

The ships bound up the Ganges are not always obliged to \rightarrow in Ballasore Road for pilots, because you frequently meet their boats as soon as you have doubled Point Palmiras. Each nation have their peculiar ones, nor is it proper to use them promiscuously; nor is it proper to use those of another nation when as good of your own may be had. Sad accidents have happened by trusting to unskilful pilots; the best should always be preferred.

Mr.

Mr. Nichelson's Description of the Coasts of Malabar, Canara, Decan and Concan.

CLXVI. Of CAPE COMORIN.

Cape Comorin is in latitude $7^{\circ} 56' N.$ and longitude $77^{\circ} 25' E.$ from London. The variation, 1763, was $41' W.$ The extremity of this cape is level, low land covered with trees, and cannot be seen from a ship's deck, more than 4 or 5 leagues; so that few ships coming this way see the cape, but a little hill to the northward thereof, which appears like an island, when it bears from NEbN. to ESE. This is what people in general take for the cape, and set it as such. A little to the northward of this hill, begins the chain of very high mountains, which stretch a great way in-land to the northward, and are called the Mountains of Gatta; which may be seen 8, 9, or 10 leagues at sea.

There are good foundings all about Cape Comorin. To the eastward, the cape bearing NW. you have from 35, 30, 25 to 22 fathoms, coarse brown sand, about 5 leagues off: the cape bearing NbE. 4 leagues, you have 20 fathoms; ditto NE $\frac{1}{2}$ N. 4 or 5 leagues, 24 fathoms; ditto NEbE. 3 leagues off shore, 24 fathoms, coarse sand; ditto E $\frac{1}{2}$ S. and the extremes of land to the northward, NbW $\frac{1}{2}$ W. off shore 4 leagues, 30 fathoms. The cape from NNE. to NEbN. 7 or 8 leagues, 38 fathoms, muddy ground; ditto NEbN. 6 or 7 leagues, 35 fathoms, ouze, with some sand; when the extremes of the land to the northward will bear NbW. The cape ENE. and the extremes of the land to the northward, NbW $\frac{1}{2}$ W. off shore about 4 leagues, you have 24 fathoms, sandy ground.

On Nov. 13, 1759, being at noon, by a good observation, in latitude $7^{\circ} 46' N.$ the little hill that appears like an island to the northward of the true Cape Comorin bearing NE $\frac{1}{2}$ N. and the extremes of land to the northward NbW. off shore 6 or 7 leagues, had 35 fathoms. From noon to 2 P. M. the course steered was NbE. $2\frac{1}{2}$ miles, when we saw breakers on a sunken rock, which must be very near the surface of the water, by the sea breaking on it, whilst elsewhere it was so very smooth. We saw the breakers very plain for 15 or 20 minutes, and passed within a mile of them. When they bore SE $\frac{1}{2}$ E. about $1\frac{1}{2}$ mile, we sounded and had 35 fathoms; the extreme part of the hill, which we set for Cape Comorin, bearing NE. a little northerly; and the northernmost land in sight NbW. Our distance from what we took for

for the cape, as near as we could judge, was 6 or 7 leagues. This is a dangerous rock, but it is very small.

CLXVII. Of POINT CADIAPATAM, two small ISLANDS, and a ROCK.

From Cape Comorin, to Point Cadiapatam, the course is WNW½W, distance 6 leagues. This point of Cadiapatam forms the east side of Coleche Bay, and is very remarkable; being a very red steep land, close to the sea, with a grove of tall trees on the extremity of it. From this point inlandward the land rises to a tolerable height, at the top whereof is another grove of tall trees, which seem very regular: this is the highest land in sight near the sea.

SSW. from Cadiapatam Point, distance 3 or 4 miles, there are two little islands surrounded with rocks and foul ground; and S½E. from the northernmost of these there is a rock even with the water, except only about the bigness of a cask of it above water. This is the same with that mentioned in the New Directory, as appearing like a buoy. It lies about 6 or 7 miles off shore, and has 13 fathoms within a boat's length of it; 17 fathoms about ¼ of a mile without it; 19½ and 20 fathoms about ½ a mile without it; 22 fathoms about a mile without it; and only 23 fathoms 1½ or 2 miles without it, sandy ground. I have sounded all about this rock, and took the following bearings upon it, viz. the northernmost of the small islands N½W. the outermost high land of Cape Comorin EbN½N. the outermost low land, which is the very pitch of the cape E. distance about 5 leagues; Point Cadiapatam NNE½E. and the extremes of the land to the northward NW½N. off shore, 6 or 7 miles. I would not advise you to go under 28 or 30 fathoms hereabout in the night-time, or hazey weather; for the coast hereabout is very foul and dangerous, having many straggling rocks lying a great way off shore.

CLXVIII. Of COLECHE BAY, RUTTERA POINT, ANJANGA, QUILON, PORCA, COCHIN, and PANIAN.

From Point Cadiapatam, 4 or 5 miles to the westward, is Coleche Bay. On the shore hereabout are several buildings like pagodas. On the west side of Coleche Bay, begins a pretty high red land, intermixed with white, near the sea, and very steep to sea-ward. This land continues about 2 or 3 leagues to the westward of Coleche Bay, and there ends.

From Coleche Bay, as far as Ruttera Point, you see high mountains in land; and some small distance from the sea, you see tolerable high land, which stretches

stretches to the northward as far as Ruttera Point, and there it ends. Ruttera Point is close to the sea, and seems to stretch from the last-mentioned high land. It is a low, level land, terminating in a bluff to seaward, and is higher than any land hereabout near the sea. There is a church a little to the southward of this point, by which it may be known; and several other buildings are along shore.

From Point Cadiapatam to Ruttera Point the course is NW $\frac{1}{2}$ W. 11 or 12 leagues. You have soundings between them from 24 fathoms 3 leagues off Cadiapatam, to 30 fathoms 4 or 5 leagues; to 35 or 40 fathoms 6 or 7 leagues off shore. When you are to the northward of Coleche Bay, you may go into 20 fathoms 2 miles off shore; to 30 or 34 fathoms 4 or 5 leagues off shore. Off Ruttera Point the water deepens, there being 24 and 27 fathoms 3 or 4 miles from it; 33 fathoms 4 leagues off; and 35, 40, or 45 fathoms from 4 to 6 leagues off, sandy ground.

Here it may not be amiss to observe, that the Coast of Malabar lies NNW. and SSE. so that, being 5 leagues off Ruttera Point, a NNW. course will carry you along shore to the Island Kanary, (a little to the southward of Bombay) and as far without it as you were from Ruttera Point; and a SSE. course from Kanary will carry you the same distance off Ruttera Point, as I have several times experienced. There are good and regular soundings all along this coast, only in some places deeper, and others shoaler water.

From Ruttera Point to Anjanga, the course is NbW $\frac{1}{2}$ W. distance 7 leagues; the coast between them is low to seaward, but covered with trees, which makes it seen at a pretty good distance. There are high mountains in-land, at a great distance; and along shore there are several buildings: the coast is bold and clear, having 11 or 12 fathoms within $1\frac{1}{2}$ mile of the shore; 24 or 25 fathoms $2\frac{1}{2}$ or 3 leagues off shore: and 30, 35, to 40 or 45 fathoms, from 4 to 6 leagues off shore.

Anjanga lies in latitude $8^{\circ} 42' N.$ and longitude $76^{\circ} 25' E.$ from London. The variation here, 1763, was $28' W.$ You may \rightarrow , in Anjanga Road, in 11, 12, or 13 fathom water, the Red Cliffs bearing NNW $\frac{1}{2}$ W. the flag-staff ENE $\frac{1}{2}$ E. the extremes of the land to the southward SE $\frac{1}{2}$ S. off shore $1\frac{1}{2}$ or 2 miles. About 4 or 5 miles to the northward of Anjanga there are some pretty high and steep red cliffs, close to the sea, where may be had fresh water; but there being always a great surf on the shore makes it very tedious watering. The water at Anjanga is both bad and scarce.

About 5 leagues to the northward of Anjanga, is the Dutch settlement of Quilon, a very inconsiderable place. From the Red Cliffs, which are 4 miles

to the northward of Cochin, the coast is very low, and only to be discerned by the trees upon it. The soundings are gradual to the shore; you have 10 or 11 fathoms 2 miles off shore; 22 or 23 fathoms 3 leagues off shore; and 28 fathoms 5 or 6 leagues off shore; which is as far as you can see the land off deck.

From Anjanga to Cochin the coast lies NNW $\frac{1}{2}$ W. distance 28 leagues. You may coast it along shore in from 10 to 20 fathoms; and after you are to the northward of Quilon, you may coast it to Cochin, from 7 to 16 fathoms; in which depths you will be from 4 miles to 4 leagues off shore.

From Porca, or Porcat, a Dutch settlement, to Cochin, and as far to the northward as Banian, another Dutch settlement, is the shoalest part of all the Malabar Coast, but no danger, there being gradual soundings to the shore. You have 6 or 7 fathoms 1 $\frac{1}{2}$ or 2 miles off shore; 12 or 14 fathoms 3 or 3 $\frac{1}{2}$ leagues off; and 22 or 23 fathoms at 6 leagues distance, when you can but just see the land off deck. The bottom hereabout muddy and ouzy.

As you sail along the coast you cannot see the town of Cochin, on account of the many trees that are about it. It would be difficult to know it, but for its very high flag-staff, and large flag, which being erected on a very high tower, may be seen over the tops of the trees.

The town and fort of Cochin is the chief settlement of the Dutch on the Malabar Coast, and a place of great trade. It is situated on the south side of the river, at the entrance, and is in latitude 9° 58' N. and longitude 76° 8' E. from London. The variation, by several observations, in the year 1763, was 1° 34' W. You may \rightarrow in Cochin Road from 5 $\frac{1}{2}$ to 6 $\frac{1}{2}$ fathoms, muddy ground; the flag-staff bearing ENE. or EbN $\frac{1}{2}$ N. off shore 1 $\frac{1}{2}$ mile. Here you may get plenty of wood and water. Poultry and all kind of refreshments are to be had in great plenty here.

Being in the offing, any where about Cochin, 6 or 8 leagues to the northward or southward of it, you will but just see the land off deck, in 22 or 23 fathoms, or about 6 leagues off shore. You have 16 fathoms, 3 leagues off, with gradual soundings to the shore; all muddy ground, excepting as follows.

There is a shoal with 4 fathoms water on it, lies off the Dutch settlement Pauian, or a little to the northward thereof, in latitude 10° 34' N. about 4 miles off the shore. Within this shoal there are 6 $\frac{1}{2}$ and 6 fathoms within a mile, or a mile and a half of the shore; and there are 9 $\frac{1}{2}$ or 10 fathoms, a mile without it, muddy ground; and 14 fathoms, a mile and a half or 2 miles without

without it. His Majesty's ships Weymouth and Cumberland were on this shoal in 1758. The Weymouth had 4 fathoms water on it: and the Cumberland, missing stays, \rightarrow ed on it in 5 fathoms water, and sounded well about it. The Weymouth \rightarrow ed a mile without it in $9\frac{1}{2}$ fathoms water, and sounded well about this shoal. This shoal is but small, and we do not know that there is any less than 4 fathoms water on it; but it is alarming to come suddenly, in the space of a mile, from 11 or 12, into 4 fathoms; therefore great ships should keep out in 13 or 14 fathoms hereabout, in order to keep clear of this shoal, and to prevent their being surpris'd by coming too suddenly into shoal water.

CLXIX. Of CALLICUT, TILlicherry, MAHE, MOUNT DILLA, and CANANORE.

From Cochin to Callicut the coast lies NNW. a little northerly, distance 30 leagues. The land near the sea is low and woody, but clear of danger. As you come near Callicut, if the weather is clear, you may see, a great way in-land, exceeding high mountains; these are part of the great chain of mountains which extend from Cape Comorin, and run a great way farther to the northward, called the mountains of Gatta. You may coast it along from Cochin to Callicut in 8, 9, or 10 fathoms, muddy ground, at $2\frac{1}{2}$ or 3 miles off shore; and you will have 20, 25 and 30 fathoms, from 4 to 5 and 6 leagues off shore.

Callicut may be known by the many little hills near the sea, and very high mountains in-land; there are also several little pagodas near the shore, which appear very white. Here the English, French, Danes and Portuguese, have each a factory-house, whereon they hoist their flags. This is a place of considerable trade, in pepper, timber, and cardamums. The latitude of Callicut is $11^{\circ} 21' N.$ and longitude $76^{\circ} 3' E.$ from London. The variation by observation, 1763, was $30^{\circ} E.$ You may \rightarrow in Callicut Road in $5\frac{1}{2}$ or 5 fathoms, soft muddy ground, off shore about 2 miles; and the tombs to the northward of the town bearing ENE. or ENE $\frac{1}{2}$ N. When Callicut bears east about 6 miles, you have 15 or 16 fathoms; and when the English flag staff bears NEbE. about 2 miles, there is a shoal with 3 fathoms, hard rocky ground, which extends NNW. and SSE. a large quarter of a mile, and its breadth is little more than 2 ships lengths, and has 5 fathoms just without.

From Callicut Road to the Sacrifice Rock, the course is NWbW. distance 6 leagues. This island, or rock, is about as high as a large ship's hull out of the

the water, and steep to on all sides. It lies about 3 leagues from the Continent, and is very white, being covered all over with bird's dung. Its latitude is $11^{\circ} 36'N$; the variation, 1763, was $14^{\circ}W$. I never was through between this island and the main, but have seen ships go through, and been informed by those on board them, that there is a good channel, with 8 or 9 fathoms clear ground, and regular soundings. By going within-side this rock, you make a shorter cut to Tillicherry. You have soundings from Callicut to the Sacrifice Rock, from 6 or 7 fathoms, to 14, 15, 16, and 17 fathoms, $1\frac{1}{2}$ mile without-side the rock; and 24 or 25 fathoms about 4 or 5 miles off it. In the night or hazy weather, I would advise you not to come under 20 fathoms, but keep in 20 or 22 fathoms; this will carry you clear of all danger.

From Sacrifice Rock to Tillicherry the course is $N\frac{1}{2}W$. distance 7 leagues. Being in 17 fathoms water, $1\frac{1}{2}$ or 2 miles without the rock, you will have very regular soundings between that and Tillicherry, from 17 to $5\frac{1}{2}$ fathoms, ouzy ground. You may \rightarrow in $5\frac{1}{2}$ or 5 fathoms, the flag-staff at Tillicherry bearing NEbN. Green Island (a pretty high island, covered with trees) NbW $\frac{1}{2}W$. off shore $1\frac{1}{2}$ or $1\frac{3}{4}$ of a mile. There are several great rocks to the northward of the town, but no danger, as they are close in shore. Tillicherry is an English settlement, in latitude $11^{\circ} 50'N$. and longitude $75^{\circ} 45'E$. from London; the variation, 1763, by several observations, was $1^{\circ}W$. Here may be had good fresh water, and other refreshments.

About 2 leagues to the southward of Tillicherry, stood the forts and town of Mahe, which was the chief settlement belonging to the French, on the Malabar Coast. They had built the town and forts, and made it a strong place. The principal fort was situate on a bluff point, at the mouth of a little river, which is navigable for only small country vessels; there were 2 other forts, both built on hills. This place was taken by the English in February, 1760, and destroyed. The best \rightarrow ing in Mahe Road, in fine weather, was in 5 or 6 fathoms, the flag staff EbN. or EbN $\frac{1}{2}N$. $1\frac{1}{2}$ or 2 miles off shore.

The coast between Callicut and Tillicherry is low, and covered with wood; but there are several high hills a small distance in-land, and very high mountains a great way in-land.

From Tillicherry to Mount Dilla the coast lies NW $\frac{1}{2}N$. distance $7\frac{1}{2}$ leagues, and is low and woody; but high hills are seen in-land. You may coast it between them in from 10 to 14 or 15 fathoms, from 4 to 6 miles off shore; but off Mount Dilla, in 14 or 15 fathoms, you will not be more than 3 or 4 miles off shore. I have passed it in 10, 11, or 12 fathoms, 2 or 3 miles off

it. The soundings of it are very regular. In the offing between Tillicherry and Mount Dilla, you have soundings from 20 to 26 fathoms, ouzy ground, from 4 to 5 leagues off shore; and from 25 to 30 and 35 fathoms from 5 to 6 or 7 leagues off shore. When Mount Dilla bears from EbN. to SEbE. distance 6 or 7 leagues, you have 31, 32, or 33 fathoms, sandy ground.

About 3 leagues to the northward of Tillicherry is the Dutch settlement of Cananore.

Mount Dilla is a high mountain, lying ENE. and WSW. and forms a point of land that projects into the sea. The French had a small fort on the outer part of it, next the sea, which may be seen as you pass it. Coming from the northward or southward it appears separate from the coast, the land within it, and on each side of it, being very low; so that at a distance it appears like an island, which renders it very remarkable to navigators. The latitude of Mount Dilla is $12^{\circ} 6' N$. the variation off it, 1763, $34^{\circ} E$. It may be seen 9 or 10 leagues in clear weather.

CLXX. Of MANGALOR, ANNANORE, BASSALORE, the PERMIRA and ST. MARY'S ROCKS.

From Mount Dilla to Mangalore, the coast lies NNW. distance 16 leagues, and still continues low and woody, as well as clear of all danger. About 5 or 6 leagues to the northward of Mount Dilla, and some distance in-land, there is a high hill called mount Formosa; and about 6 leagues to the northward thereof is a long, high, sloping hill, called Barn Hill, with several other hills further in-land. You may stand in shore to 7 or 8 fathoms with safety, and coast it in 9 or 10 fathoms, at 5 or 6 miles distance. In the offing between them you will have 16 fathoms $2\frac{1}{2}$ leagues off shore; and from 27 to 30 fathoms, ouzy ground, from 5 to 6 leagues off shore. Mangalore bearing $E\frac{1}{2}N$. and Barn Hill ESE. off shore $4\frac{1}{2}$ or 5 leagues, you will have 21 or 22 fathoms; and Barn Hill $EbS\frac{1}{2}S$. and Mangalore east, off shore about 6 leagues, you will have 30 fathoms, sand and ouze.

Mangalore, a place of great trade for rice, is situated at the mouth of a river, navigable only for small ships, as it has a bar. On the south side of this river there is a fort, belonging to the Portuguese, where they hoist their colours, which may be seen a great way at sea. The \rightarrow age in the road is opposite the river in 5, 6, or 7 fathoms, soft muddy ground. The latitude of this place is $12^{\circ} 50' N$. The variation, 1763, was $37^{\circ} W$. Hereabout the land is pretty high.

From

From Mangalore to Annanore, the coast lies NNW. 31 leagues. A little to the northward of Mangalore, the coast begins to be very high. About 8 or 9 leagues to the northward of Mangalore, there is a Moors settlement, called Bassalore, at the back of which is a very high mountain, with a remarkable peak, called the Peak of Bassalore. It continues high and mountainous a great way to the northward of Annanore. This high land is not close to the sea, though it appears so: for the coast near the sea is low and woody, with regular soundings toward the shore, and continues so to that part opposite Pigeon Island, which bears from Mangalore NNW½W. 28 leagues. Between Mount Dilla and Pigeon Island, you have soundings further off the land than any other part of the coast. From 30 to 40, 50, and 56 fathoms, fine sand, from 7 to 10, 12, or 14 leagues off shore and very regular soundings.

From Cape Comorin to Mangalore, is the proper Coast of Malabar; and from thence to Bombay the Coast of Canara: but people in general call the whole by the name of the Malabar Coast.

The Permira Rocks bear from Mangalore NWbN. 10 or 11 leagues; they lie 3 or 3½ leagues off shore, in latitude 13° 17' N. are as high as a small ship's hull out of the water, and may be seen 3½ or 4 leagues from a ship's deck. Come no nearer these rocks, in the night or hazy weather, than 18 fathoms. I have sounded well about these rocks, and have passed them in 16½, 16½, 16, 15½ fathoms, at 2 or 2½ miles distance without them; and you will have no less water close to them: the soundings are regular and even, sand and ouze. You have 17 fathoms 3 miles without these rocks; 18½ fathoms about 4 miles without them; and 20 or 21 fathoms 5 or 6 miles without them; and then you will be 5 or 6 leagues off shore. The variation of these rocks, 1763, was 28° W.

The St. Mary's Rocks are several little islands, or rocks, lying 2½ or 3 leagues off shore, in latitude 13° 30' N. some of which are as high as the hull of a small ship, others low and flat; they bear NNW. 4 or 5 leagues from the Permira Rocks, and may be seen 3 or 3½ leagues from a ship's deck. You have 15½ or 16 fathoms 2 or 3 miles without these rocks. I would not advise you to come nearer them than 16 fathoms; and in the night or hazy weather, not nearer than 17 or 18 fathoms, in which depth you will pass 4 or 5 miles without them, you have 21, 22, or 23 fathoms, 6, 7, or 8 miles without them, when you are 5 or 6 leagues off shore. The variation, 1763, was 43° W.

From St. Mary's Rocks to Pigeon Island, you have regular soundings toward the shore, viz. from 10 to 12 fathoms, 4 or 5 miles off shore; 15 or 16 fathoms

fathoms 3 leagues off; 19 or 20 fathoms, 4 leagues off; 24 or 25 fathoms, 5 leagues off; and 30 to 33 fathoms, 6 or 7 leagues off: very regular soundings, and ouzy clear ground.

CLXXI. Of PIGEON ISLAND, HOG ISLAND, ANNANORE ROAD, ANJEDIVE ISLE, CAPE RAYMAS, and ST. GEORGE'S ISLAND.

Pigeon Island is a small, but very high round island, which may be seen 9 or 10 leagues in clear weather. It lies about 3 leagues from the Continent, in latitude $14^{\circ} 4' N.$ has a little island, or rock, to the south-eastward, and another to the eastward of it. The variation, 1763, by several observations, was $1^{\circ} 2' W.$

From Pigeon island, E $\frac{1}{2}$ S. $2\frac{1}{2}$ leagues, lies a small, but very high island, with a peak much like the top of a sugar-loaf, called Hog Island. It lies near the Continent, with several small islands or rocks near it, and has gradual soundings toward them from 8 to 9 fathoms.

The Continent hereabout is very high and mountainous. You may with great safety go between Pigeon and Hog Island. You have 16 or 17 fathoms mid-channel, to 11, 10 or 9 fathoms on the continent side. When to the northward of Hog Island, you may coast it along to Annanore Road, in 7, 8, or 9 fathoms, 3 or 4 miles off shore, without danger.

In Annanore Road you may \rightarrow in from 5 to 6 fathoms, soft muddy ground; the flag-staff at Annanore bearing EbN. or ENE. Fortified Island, NbW. off shore $1\frac{1}{4}$ or 2 miles; and Pigeon Island SbW. $3\frac{1}{2}$ or 4 leagues. A considerable Indian town is situated at the mouth of a salt-water river, where the English have a factory; it is noted for producing great quantities of rice and pepper; its latitude is $14^{\circ} 14' N.$ The variation off this place, 1763, was $1^{\circ} 16' W.$ There is no fresh water to be had here. About $1\frac{1}{2}$ mile to the northward of Annanore, is a high green island, level a-top, a small distance from the Continent, with an Indian fortification on it; therefore it is called Fortification Island.

In the stream of Pigeon Island, you have 20 and 21 fathoms. I have passed without this island several times, within 3 or 4 miles of it, bearing from EbS. to EbN. and had 24, $24\frac{1}{2}$ and 25 fathoms. In the night or hazy weather, a ship should not come nearer than this depth. You will have 30, 32, or 34 fathoms, 3 or 4 leagues without it, when you are 6 or 7 leagues off shore: regular soundings, sand and ouze.

From Annanore, NWbN. 15 or 16 leagues, is the island Anjedive; and the Duckey or Oyster Rocks, from Pigeon Island NbW. 17 leagues, and from
Cape

Cape Raymas SEbS. about 5 leagues. They lie in latitude $14^{\circ} 55' N.$ at the entrance of Carwar, which is a large and deep bay.

The settlement of Carwar, which formerly belonged to the English, but now to the Portuguese, is on the north side of the bay: the fort is situated on a high point of land, and is very white; this makes it very conspicuous a great way at sea. When the fort at Carwar, and the Duckey Rocks, are in one, ENE $\frac{1}{2}$ E. distance off shore 3 leagues, and from the rocks 7 or 8 miles, and Cape Raymas N $\frac{1}{2}$ W. you have then 16 and 17 fathoms. In the offing, in 19 and 20 fathoms you will be $3\frac{1}{2}$ or 4 leagues off shore. You have 25 to 28 or 30 fathoms, from 5 to 7 leagues off shore; sandy ground. Between the Duckey Rocks and Cape Raymas, you have 14, 15 and 16 fathoms, from 5 to 7 miles off shore.

From Annanore to Cape Raymas, the coast lies NNW $\frac{1}{4}$ W, distance 21 leagues; and from Pigeon Island, NbW $\frac{1}{4}$ W. 22 leagues. It is high and mountainous, but bold and clear of all danger. Cape Raymas (coming either from the northward or southward) shews itself a very high, steep, bluff head-land, and has, on the top thereof, an Indian fortification. It is in latitude $15^{\circ} 7' N.$ The variation off it, in 1763, was $1^{\circ} 26' W.$ I have passed within 2 miles of this cape, in $11\frac{1}{2}$ and 12 fathoms, regular soundings, sandy bottom. When it bears from EbS. to EbN. 3 or 4 miles distance, you have from 14 to $15\frac{1}{2}$ fathoms; and 5 miles off this cape, you have 16 and $16\frac{1}{2}$ fathoms; and likewise 5, 6, or 7 leagues off, you have 30, 36, to 45 fathoms; from which depth to the shore it shoalens gradually. From Pigeon Island to Cape Raymas, you have 10, 11, 12, or 13 fathoms, from 2 to 3 leagues off shore. There is a high rock, some distance from the shore, off a point a little to the northward of Cape Raymas.

From Cape Raymas to Goa, the coast lies NbW. distance 8 leagues. The land between them, near the sea, is low and woody; but at some distance inland it is high. This part of the coast is clear from danger: you may coast it along shore, as far as St. George's Island, in from 13 to 12, 11, or 10 fathoms, regular soundings, sand and ouze; but attempt not to go between St. George's Island and the Continent, there being no passage that way. From Cape Raymas to the outer part of St. George's Island, the course is NNW $\frac{1}{4}$ W. distance 6 or $6\frac{1}{2}$ leagues. You have soundings between them, $2\frac{1}{2}$ or 3 leagues off shore, from 17 to 18 fathoms.

I have passed several times, within 3 or 4 miles of St. George's Island, in 15 and $15\frac{1}{2}$ fathoms, regular soundings, sandy bottom: this was in the day
time;

time; but in the night or hazy weather, I would not advise you to go into less than 18 or 19 fathoms; in which depth you will pass 5 or 6 miles without it, clear of all danger. You have from 25 to 30, and 35 to 40 fathoms, from 4 to 6 or 7 leagues without this island. Its latitude is $15^{\circ} 23' N$. It may be seen 6 or 7 leagues in clear weather.

A little to the northward of St. George's Island lies the Island Marmagon Salsset, being a long, high, but level island, breaking off almost perpendicularly at both ends; the north point of which is called Marmagon Point. When this point and the north part of St. George's Island are in one, or touching, they bear NNE, and from this point the Algarda Fort, at the north side of the entrance into Goa, bears $N\frac{1}{2}E$. distance 7 or 8 miles: you have soundings between them from 16 to 14, 12, 10, 9, 8, 7, 6, $5\frac{1}{2}$ fathoms; in which depth you may \rightarrow in Goa Road. From the outer part of St. George's Island, to the head-land on the north side the entrance into Goa Bay, which is a high table land, and breaks off with a sudden slope towards the sea, the course is $N\frac{1}{2}E$. distance 3 or $4\frac{1}{2}$ leagues.

CLXXII. *Of GOA ROAD or BAY, ALGUARDA FORT, the ANCHORAGE, TIDES and SOUNDINGS.*

This head-land being high and level at top, is easy to be known, there being a church on the inner, and a light-house on the outer part of it, in which the Portuguese keep a light during the SW. monsoon. The latitude of this head-land is $15^{\circ} 31' N$. and longitude $73^{\circ} 44' E$. from London; the variation, by several observations, 1763, $1^{\circ} 50' W$. Near the light-house is a small fort, which has a line of communication with the Algarda Fort, situated at the foot of the said high land close to the sea, which has a great number of guns, and commands all the Bay of Goa. In this fort is the watering-place where ships get all their water. Opposite to the Algarda Fort is the monastery Nossa Senhora de la Caba, situate on a high, steep point of land, which makes the south side of Goa Bay. This being a large building, kept very white, and of an elevated situation, is very conspicuous, may be seen a great way at sea; and by it Goa may be easily known. St. George's Island is also a good mark to know when you are the length of Goa.

The Bay of Goa is large and round, but very shallow water all over it: the deepest water is on the north side; there you have no more than $5\frac{1}{2}$ or 5 fathoms at high, and $4\frac{1}{2}$ or $4\frac{1}{4}$ at low water; soft, muddy bottom. It is not only shallow, but rocky, on the south side of the bay, towards Nossa Senhora de

de la Caba, from which there runs out a reef of rocks above water, and under water: these should be avoided. This bay is a very good road, where ships may lie in great safety during the NE. monsoon; but in the SW. monsoon they are exposed to both winds and sea, which then rage with great violence.

In the beginning, or toward the middle of May, it is reckoned dangerous for ships to lie in this bay. The Portuguese then send such of their ships as can go, into the river, where they lie all the monsoon in great safety. Such as cannot get into the river, go and lie for the monsoon at Marmagon Salset: they moor close under that island; there they are sheltered from the SSW. W. and WNW. winds, which are the prevailing winds in that monsoon. They are likewise pretty well sheltered from the sea, though there sometimes rolls in a large swell to the road where they lie: this is called Marmagon Road, it being the only place the Portuguese have for their great ships to lie in, during the bad-weather season. The ground is clear and good \rightarrow age.

If, coming from the southward, you are bound into Goa, being off Marmagon Point in about 15 fathoms, steer to the northward till you bring the head-land on the north side of Goa Bay to bear NE. or the flag-staff at the Alguarda Fort ENE. in order to avoid a dangerous shoal of rocks under water $\frac{1}{2}$ of the way between Marmagon Point and the Monastery of Nostra Seínora de la Caba.

You may steer in for Goa with the Alguarda flag-staff ENE. or EbN. having gradual soundings from 15, 14, 12, 11, 10, 9, 8, 7, 6, 5 $\frac{1}{2}$ fathoms, in which depth you may \rightarrow in Goa Road; or in $\frac{1}{2}$ less 5 fathoms, the flag-staff at the Alguarda Fort NNE. the Monastery of Nostra Seínora de la Caba SE. and the outer point on the north side of the bay, NbW. distance off shore $\frac{1}{2}$ or 1 mile.

You may \rightarrow still further in, and nearer the Alguarda Fort, in 4 $\frac{1}{2}$ fathoms; the flag-staff bearing NbE. or N. distance $\frac{1}{2}$ or $\frac{3}{4}$ of a mile; and the entrance into Goa River EbN. or EbN $\frac{1}{2}$ N. I have \rightarrow ed in a 70 gun ship, in a very convenient birth for watering with dispatch, the Alguarda Fort N. 10° W. distance a large $\frac{1}{2}$ or $\frac{3}{4}$ of a mile, the monastery Nostra Seínora de la Caba S. 31° 30' E. the entrance of Goa River E. 20° 30' N. and had 5 fathoms at high, and 4 $\frac{1}{2}$ at low water. This is a good birth.

On the NE. side of Goa Bay is the entrance of a very large river, navigable for ships of 500 or 600 tons, that can go quite up to the city of Goa, which is 7 miles up the river; but this river is difficult of access, having a bar across its mouth, which makes the navigation into it very intricate; therefore a pilot of the place must be had to carry the ship in and out

out. On this bar there are 16 or 17 feet at high water, on spring-tides. The Portuguese have a fort on the north side of the entrance of this river, on a high hill; and a low battery on the south side of the river; both of which a ship must go very close to, in entering the river.

The tide in Goa Road flows at full and change, ENE. and WSW. or at $\frac{1}{2}$ past 4 o'clock; but always sets out of the river, though it ebbs and flows regularly about 6 feet perpendicular by the shore. In the bay, the flood is a kind of still water; for the tide has no motion whilst it is flowing, which is about 4 hours. From the time of high water it sets pretty strong out of the bay for 7 or 8 hours.

Goa is the chief settlement belonging to the Portuguese in India. It is a large and spacious city, situated on the south side of a spacious river, which it gives name to, 7 miles above its entrance; it is very populous, and the residence of a vice-roy. There is a considerable trade carried on at this place, but not so great as formerly; it is famous for making Goa arrack, in which its trade now principally consists. There are many ships belonging to this place, it being the general rendezvous of the Portuguese men of war, and all their cruisers, of which they have a great number. They have convenient places up the river for heaving ships down, and repairing them, at which they are very dexterous. They also build many ships here, having plenty of timber for the purpose. Naval stores of all kinds may be had here.

Wood and water may be got here in plenty; the watering-place is in the Alguarda Fort, where the water is conducted down to your boats in spouts, to which you fix a hose, and fill your casks with great ease and dispatch.

Fresh provisions, vegetables and fruits, may be got here; and also some sea provisions, such as rice, callivances, arrack, sugar and some flour.

Off Goa you have 9 or 10 fathoms 3 or 4 miles without the Alguarda Fort; and from 22 to 24 fathoms 3 or 4 leagues off; and from 30 to 35 fathoms 5 or 6 leagues off; and from 60 to 62 fathoms 9 or 10 leagues off; and a little without that, 90 fathoms, in which depth you can but just discern the land; all ouzy ground.

CLXXIII. *Of the VINGORLA ROCKS, GARIA, ROGIPORE, or RAJAPOUR, and the CAPE DOBS and Z.*

From Goa to the Vingorla Rocks, the course is NWbN. distance 12 leagues: they are pretty high and bold, clear from all danger; the outermost part of these rocks bearing from Vingorla River, WSW. 4 leagues; and 3 or 3 $\frac{1}{2}$ leagues

leagues from the continent. They are 12 or 14 in number, and may be seen about 5 leagues from a ship's deck; lying in latitude 16° N. It is said that there is a passage between these rocks and the continent.

You may coast it along from Goa in 10, 11 or 12 fathoms, from 4 to 6 miles off shore. You have 15 and 16 fathoms 3 leagues off shore; and 20, 25, 30 to 35 fathoms, from 4 to 6 leagues off shore. I have passed within 2 or 3 miles of these rocks in $17\frac{1}{2}$ fathoms; and when they bore east 5 or 6 miles, I have had 18 fathoms. You have from 30 to 35 fathoms, 5 leagues off, when they can but just be seen from a large ship's poop: ouzy ground. I would advise you, if passing these rocks in the night-time or hazy weather, not to go under 20 fathoms: this will carry you $2\frac{1}{2}$ or 3 leagues without them.

There is a good road to the southward of these rocks, where a ship may \rightarrow in case the wind blows hard at NW. by bringing the outermost rock to bear WNW. or WbN. and the extremes of the land to the southward, SE. in 12, 13, or 14 fathoms, clear, muddy ground. Here you will lie in very smooth water, and well sheltered from the NW. sea.

In the river Vingorla there is a nest of pirates, who are always on the look-out; they have a great number of gallivats and some grabs, cruising about the Vingorla Rocks, and take ships of all nations that they can conquer. It is dangerous for ships of little or no force to come near this place: such therefore keep in the offing, out of sight of land, unless they have a convoy.

From the outermost of the Vingorla Rocks to Gariah or Garey, the course is NbW $\frac{1}{2}$ W. distance 13 leagues: the coast between them is pretty high, and clear of all danger. You may coast it between them in from 13 to 14 fathoms 4 or 5 miles off shore, to 20 or 21 fathoms 3 or $3\frac{1}{2}$ leagues off shore. You have 25 and 26 fathoms, 5 leagues off shore; and from 30 to 33 fathoms, 6 or 7 leagues off shore; regular soundings and ouzy ground.

Gariah lies from Goa NNW. distance 23 leagues, and is situated on Point Vigiadore, which makes the south point of Gariah bay: this is a high bluff point, whereon is a strong fort, with very high walls and a great number of guns. This place formerly belonged to Angria, and was his principal port; but now belongs to the Marattas. The flag-staff at Gariah is very high, and may be seen a great way at sea. Its latitude is $16^{\circ} 36'$ N. the variation off this place, 1763, was $1^{\circ} 16'$ W. When the flag-staff bears EbS. 2 or 3 miles, you have 11 or 12 fathoms; EIS. 6 or 7 miles, $15\frac{1}{2}$ or 16 fathoms; from EbN. to EbS. $3\frac{1}{2}$ leagues, 20 fathoms; and with the same bearings 6 or 7 leagues, from 30 to 33 fathoms, ouzy ground.

From Gariah to Rajapour Island the coast lies NNW. distance 10 leagues: this is a small but high island, covered with trees, and lies but a small distance off the continent, and 3 or 4 miles to the southward of Rajapour River. Its latitude is $17^{\circ} 3' N.$ The river has a wide entrance like a large bay, with pretty high land on each side it. From Gariah to Rajapour the coast is tolerably high, bold, and clear of danger. You may coast it along between them in from 14 to 16 and 17 fathoms from 4 to 6 miles off shore. You have from 20 to 25 fathoms 4 or 5 leagues off shore; and from 25 to 30 and 35 fathoms 6, 7, and 8 leagues off shore, muddy ground.

NNW. 7 leagues from Rajapour Island, lies Cape Dobs, in latitude $17^{\circ} 23' N.$ being a high bluff head-land, shooting out into the sea: the coast between them is clear of all danger, and bold. You may stand in to 9 or 10 fathoms 2 or 3 miles off shore, and coast it along in 12 or 13 fathoms 5 or 6 miles off shore. You have 16 fathoms 3 leagues off shore; 20 fathoms 4 leagues off; and from 36 to 40 fathoms 7 or 8 leagues off the land hereabout; sand and ouze.

From Cape Dobs the coast lies NNW. 5 leagues to Cape Z. in latitude $17^{\circ} 37' N.$ The variation, 1762, was $44' W.$ This is a high, steep, red, head-land, lying out a small distance into the sea. It appears very white when the sun shines on it, which, with its being high and steep, makes it very remarkable. Between these capes the coast is high and bold: there are several openings, like entrances into rivers or harbours. When near the shore, you may see several Indian fortifications. The coast is clear of all danger. I have coasted it several times close in shore. You may stand in to 8 or 9 fathoms with safety, $1\frac{1}{2}$ or 2 miles off shore; and you may coast it along in 11, 12, or 13 fathoms from 2 to 3 leagues off shore. You have from 17 to 20 fathoms 4 or 5 leagues off; and 25 to 30 fathoms 6 or 7 leagues off shore; sand, mud, and ouze.

CLXXIV. Of DABULL, FORT VICTORY, DUNDE-RAJAPOUR, CHOUL, HUNARY and KANARY ISLANDS, and BOMBAY.

From Cape Z. to Dabull the coast lies NNW. distance 7 leagues. The land hereabout is high near the sea, but very much higher inland. The coast is bold and clear from danger. You may stand in to 8 or 9 fathoms, $1\frac{1}{2}$ or 2 miles off shore; and may coast it along in 12 or 13 fathoms, 4, 5, or 6 miles off shore. You have from 17 to 20 fathoms, 4 or 5 leagues off; from 25 to 30 fathoms 6 or 7 leagues off; and from 35 to 40 and 45 fathoms, 8, 9,

8, 9, or 10 leagues off shore; sand and ouze in the offing; in shore, muddy ground..

Opposite to Dabull, the English have lately established a factory, and built a fort called Fort Victory, which stands on a high hill near the sea, so that their flag may be seen a great way. Its latitude is $17^{\circ} 56' N.$ the variation, 1763, was $25' W.$ To \rightarrow in the road, bring the fort to bear E $\frac{1}{2}$ S. and the extremes of land from N $\frac{1}{2}$ W. to SSE. where you have 7 fathoms water, 2 miles off shore. You have 7 or 8 fathoms $2\frac{1}{2}$ or 3 miles off; 11 or 12 fathoms 5 or 6 miles off; 17 or 18 fathoms $3\frac{1}{2}$ or 4 leagues off; 20 fathoms 5 leagues off; and 25 to 30 fathoms 7 or 8 leagues off Fort Victory.

From Fort Victory to the harbour and river of Dundee-Rajapour the coast lies NNW. distance 8 leagues, being high and clear from danger. The land in the country is mountainous, and may be seen a great way in clear weather. You may stand in to 8 or 9 fathoms muddy ground, 2 miles off shore; and coast it along in 11 or 12 fathoms 2 or $2\frac{1}{2}$ leagues off shore. You have 20 and 22 fathoms 5 or 6 leagues off; 25 to 30 fathoms 7 or 8 leagues off; and from 35 to 40 fathoms 9 or 10 leagues off shore, ouzy ground; sometimes sand without ouze; but you will have it muddy in shore from 15 to 7 fathoms.

Dundee-Rajapour is reported to be a very fine harbour, fit to receive ships of any size: it has a large and wide opening to the sea, with a small island near the north side of the entrance, and high lands on both sides. Its latitude is $18^{\circ} 17' N.$ the variation, 1763, was $25' W.$

From the entrance into Dundee-Rajapour, NNW $\frac{1}{2}$ W. distance 7 leagues, lies a small low and flat island, with an Indian fortification on it, called Choul Island, from its lying off the town of Choul, in latitude $18^{\circ} 36' N.$ The town of Choul is large and considerable, as an Indian town; with a fort built on a little eminence, that may be seen 4 or 5 leagues at sea. The coast between these places is foul and rocky some distance from the shore. I would not advise you to stand in shore hereabout nearer than 8 or 9 fathoms; though I have always found the soundings very regular, and muddy bottom.

In sailing along this part of the coast you see many buildings. Near the sea is the high land, called the High Land of Choul; and in-land are many high and rugged mountains. Off Choul there are many fishing-stakes in 7 or 8 fathoms 2 or 3 leagues off shore: I have several times sailed through them. There are regular tides off this part of the coast, where it flows N. and S. or at 12 o'clock, at the full and change of the moon: the flood to
the

the northward, and the ebb to the southward, pretty strong tides, which you are to observe, and take advantage of. You have 8 or 9 fathoms 4 miles off Choul, and may coast it along shore from Dundee-Rajapour in 10 or 11 fathoms $2\frac{1}{2}$ or 3 leagues off shore. You have from 16 to 18 fathoms 4 or 5 leagues off; from 20 to 26 fathoms 6 or 7 leagues off; from 30 to 36 and 40 fathoms, 8, 9, or 10 leagues off shore; mud, sand, and ouzy ground.

From Choul Island you will plainly see the Islands Hunary and Kanary; the latter is the outermost. From Choul Island to the Island Kanary the course is NW. distance $4\frac{1}{2}$ leagues; between them you may keep in 8, 9, or 10 fathoms water, and no danger. Ships do not go between these islands, as the channel is narrow, though I have sounded well between them, and found 3 and $3\frac{1}{2}$ fathoms. You may pass to the westward of Kanary in 6 or 7 fathoms 3 or 4 miles off it; you have $4\frac{1}{2}$ or 5 fathoms within a mile of it; 11 or 12, to 15, 16 or 18 fathoms from 3 to 4 or 5 leagues off it; 34 to 36 fathoms to 8 or 9 leagues off it; and 4 to 45 fathoms, 10, 11 or 12 leagues off it. The latitude of Kanary is $18^{\circ} 45' N$. The variation off it, 1763, was $1^{\circ} 39' W$.

When this island is first seen, at about 5 leagues distance, either from the northward or southward, it appears like 2 rocks or islands, a small distance asunder, being higher at the extremities than in the middle: by this it may be known. It is fortified all round after the Indian method.

From Kanary you may see Old Woman's Island, just rising out of the water, the outer part thereof bearing $N\frac{1}{2}E$. distance 11 miles. You have 7, 8, 9, 10, and $10\frac{1}{2}$ fathoms, regular soundings, between them; muddy bottom.

There lies a bank parallel to the coast, of about 11 or 12 leagues in length, and 3 in breadth; the southernmost part being in $18^{\circ} 6' N$. and the northernmost part in $18^{\circ} 43' N$. I have had 23 fathoms on the southernmost part of this bank, 28 fathoms without it, and 27 within it, off shore 7 or 8 leagues. In latitude $18^{\circ} 16' N$. I have had 30 fathoms without it, 25 fathoms upon it, and 29 fathoms within it, off shore 8 or 9 leagues; sandy ground. In latitude $18^{\circ} 28' N$. I have had 30 fathoms without it, 26 fathoms upon it, and 32 fathoms within it, off shore 6 or 7 leagues; sandy ground. In latitude $18^{\circ} 43' N$. or the northernmost part of this bank, I have had 36 fathoms without it, 32 fathoms upon it, and 37 fathoms within it, off shore 8 or 9 leagues; sandy ground. I have been informed by some navigators, that on some parts of this bank they have had only 16 fathoms, gravelly, shingley bottom, 9 or 10 leagues off the coast. You have soundings near 20 leagues off this part of the coast, which shoalen gradually as you run in for the coast.

CLXXV. Of POINT DE GALL, and the MOUNTAINS of ZELOAN.

The land about Point de Gall or Gaula, is pretty high and hilly; but to the westward of it, the land is low. The point is bluff to the seaward, and rises higher gradually toward the land. A little to the westward of this point, is the Bay or Harbour of Gaula, where the Dutch have a considerable settlement: this has a good appearance from the sea, and is said to be well fortified.

The island of Zeloan has perhaps some of the highest and most remarkable lands in the world: the first of these, here to be mentioned, is an exceeding high mountain with a peak on the top of it, called Adam's Peak. This mountain is so high, that it is most frequently hid or covered with the clouds, and therefore is not always seen, but when the weather is clear. It may be seen an incredible distance at sea; you frequently see nothing but its peak above the clouds. In this manner it may be seen, and its bearing taken, 18 or 20 leagues off the coast of Zeloan, when you are going from Point de Gall, and are bound for Cape Comorin. It is said this mountain is near the middle of the island; but it seems nearest the SW. part thereof.

There is another high and remarkable hill, situated on a plain or level part of the country, resembling an hay-cock, from which it takes its name. When this mountain bears NbE;E. and in a line with point de Gall, you are then about 3 leagues from Point de Gall, and there are 30 fathoms water. If you are 4 leagues off with this bearing, there are from 40 to 44 fathoms water. But when Point de Gall's flag-staff bears NW;N. distance 3 or 4 leagues, and the hay-cock bears N;E. you will have soundings 33 fathoms brown sand.

Within 3 or 4 leagues off the shore, off Point de Gall, the currents are weak; but 8, 9 or 10 leagues off, they set strong to the westward.

The latitude of Point de Gall is $6^{\circ} 6' N.$ and longitude $86^{\circ} 10' E.$ from London. The variation in the offing, 1760, was $19' W.$

If you would \rightarrow in good ground in Gaula Road, come no nearer than 18 or 20 fathoms water, the flag-staff bearing between NNE. and NEbN. As to the \rightarrow age within the harbour, I need take no notice of it for the reasons above mentioned.

There are two rocks under water, going into Gaula, upon one of which the water breaks very high; and to the westward of Gaula there are also several straggling rocks under water, on which the sea breaks very high. You ought not to come under 25 fathoms hereabout.

CLXXVI. Of WOODY ISLAND, RED and MATURA BAYS, DUNDER-HEAD, NIVELLE, and NIEBWELL.

The Coast from Point de Gall to Red bay lies about EbS. $5\frac{1}{2}$ or 6 leagues; and about a league to the westward of this Bay is a small island covered with trees, called Woody Island. To the eastward of this Bay are high lands.

From Red Point, (which is the easternmost point of Red Bay) to Matura, the coast lies EbS. about 3 leagues. Matura is a Dutch settlement, having a small fort, which may be seen a great way at sea, bearing from NNW. to NE. as the coast is pretty high hereabout.

Matura Bay is very open; but you may \rightarrow before Matura, and ride smooth enough there, in the NE. monsoon, in 22 or 20 fathoms; sand mixed with shells and ouze; Matura Island bearing NE $\frac{1}{2}$ N. and Dunder-head NEbE. or ENE off shore about 2 miles. Under 20 fathoms, in Matura Road, is foul ground, unless in some small spots, which the Dutch ships are acquainted with. Here you may get plenty of wood and good water.

Matura Island is small and rocky, much resembling a hay-cock, and lies opposite the fort: behind the island is a good shelter for boats, where they come to \rightarrow , as they cannot land on account of the surf, and the shallowness of water. The Dutch send off canoes, to carry people out of the boats on shore.

The entrance of the river is about $\frac{1}{2}$ a mile to the westward of the fort. Boats go into the river a small distance to fill water, which is very good; but the entrance of the river is dangerous by rocks which lie under water, and the outlet of the river is very strong; so that, if the boats should touch on these rocks, they would be in danger of being overfet, and the people drowned: it is therefore best to have the country people to pilot them in and out; and then you may water here very expeditiously.

Matura Fort bearing NNW. and Dunder-head N $\frac{1}{2}$ W. 3 leagues, there are no soundings at 90 fathoms.

From Red Point to Dunder-head the course is EbS $\frac{1}{2}$ S. distance about 4 $\frac{1}{2}$ leagues; and from Matura to Dunder-head it is reckoned SE $\frac{1}{2}$ E. 4 or 5 miles. Off Dunder-head there lies a ledge of rocks, stretching out to the SWbW. about 1 $\frac{1}{2}$ mile, upon which I have seen the sea break very high. As far as I could judge from appearances, great ships should not come within 25 fathoms, the soundings being very uncertain hereabout. Dunder-head is a low point of land, its extremity being very low, and having on it a large cluster of high cocoa-nut trees, which makes it easily known.

The

The Red Cliffs a pretty high remarkable land, close to the sea, a little to the eastward of Dunder-head) bearing NE½E. and the extremes of the land to the westward NW½W. off shore about 3 leagues; there are no soundings at 100 fathoms. The coast is very steep hereabout.

A little further to the eastward of Dunder-head is the point Gaeliès, an high steep land, with trees on it by which it may be known.

Nivelle is a place of some trade; it may be known by a pretty high steep point on the west side of it: there is on this point a large white building with a cupola, which makes it very remarkable. Off this place you will have 32 fathoms, 4 miles off shore: here I saw a large Dutch ship lying in the road. You will have 52 fathoms between 2 and 3 leagues off shore; without that no soundings. Off Nivelle in 32 fathoms water, in latitude 5° 49' N. distance off shore 4 or 5 miles, you will see Gaeliès Point bearing WbN. distance 5 or 6 leagues.

Between these two last mentioned places there is a bay, called Niebwell or Nielwell Bay: the west point thereof appears like an island; it has a row of very high cocoa-nut trees from the one end to the other, by which it may be known. This point bearing NE. distance 3 leagues, there are no soundings at 50 fathoms.

CLXXVII. *Of the SOUNDINGS between the COAST and GREAT BASSES.*

Between Dunder-head and the Great Basses there is deep water near the coast: you will not have soundings any where along this part of the coast above 2 leagues from the shore, and in some places not above 2 or 3 miles off shore; therefore let none trust to their soundings along this part of the coast in the night-time, but keep a good look-out,

Ships that sail along this part of the coast, in the SW. monsoon, have no business in shore after they pass by Dunder-head, or the Red Cliffs; but, as they have a fair wind, they always shape a course from thence to go clear of the Great Basses. Ships in the NE. monsoon, being off the Basses, and bound westward, having also a fair wind, shape a course from thence to the Red Cliffs or Dunder-head. A WbS. course from the Great Basses, distance 18 leagues, will bring them fair with Dunder-head, within 4 or 5 leagues of it; but trust not too much to your course, for the current sets strong to the SW. and will set you off the land; therefore keep the shore close aboard. Within 2 or 3 leagues, there is no danger.

Ships

Ships taking their departure (as it were) from the above-mentioned places, in the different monsoons, and shaping their course as above mentioned, make this part of the coast, between these places, very little frequented.

I have been more than once coming this way in the month of October, and beginning of November, and have met with strong westerly winds, which obliged me to keep in with the land, and coast it along shore: this gave me an opportunity of seeing and founding the coast. There is no place of note between the Basses and Dunder-head; but there are several places where the Dutch coasting vessels frequent, of little or no consequence.

The coast between Dunder-head and the Great Basses lies nearly ENE. and WSW. distance 17 or 18 leagues: in this distance the shore is steep, and tolerably high near the sea, but much higher in-land. In most places you have from 30 to 36 and 40 fathoms water, 3 or 4 miles off the shore; and in some places you will find the water deepen, the nearer you go to the shore; all foul rocky ground. There are no soundings without 50 fathoms, and you will have that depth not above 6 or 7 miles off shore; so that there is no dependence on the soundings. There is foul ground and rocks, in some places full two miles off the shore.

It is reckoned 20 leagues from Dunder-head to the Great Basses. The English Pilot and the New Directory differ much in regard to the coast. The English Pilot says you should steer ESE. and the Directory, that you should steer East, which will carry you 8 leagues to the southward of the Great Basses; and that he takes to be sufficient for the set of current to the northward; but that you should take care to sound from time to time. I must beg leave to differ from them both in regard to the true course from Dunder-head to the Great Basses; it being my opinion, that a ship 2 or 3 leagues off Dunder-head, may with great safety steer EbN. which will carry her 4 or 5 leagues without the Great Basses. The currents are very changeable, and as often set to the westward as to the eastward, and much oftener to the southward than to the northward, mostly south-westerly; and take this caution in regard to the distance.

Though it is 20 leagues from Dunder-head to the Great Basses, yet, when you reckon you have sailed 15 or 16 leagues, you will be opposite to it; several ships have even thought they had got no further than 12 or 13 leagues. This observation is worth attending to, as well for shaping your course, as for the distance.

I have been several times cruising off the Friar's Head and the Basses in the months of July and August, being the very height of the SW. monsoon, and
always

always found strong south-westerly currents, which have set the ship 40, 50, 65, or 75, miles to the southward or south-westward, in 24 hours more than the run (by log) gave. I have also coasted it this way in the months of October, November, and December, being the beginning and the middle of the NE. monsoon; and have found the current on an average, run 24 and 30 miles (and some days 60 or 70 miles) more to the southward than the run would give. In the months of February, March, and April, I have found a strong southern or south-westerly current; but not so strong as in the fore-mentioned months; and in general, about the Friar's Hood and Basses, the currents run more or less to the southward or south-westward all the year round. I have tried the current several times, in sight of the Basses, and also in sight of the Friar's Hood, and found it set to the SWbW. SW. or SWbS 2 and 2½ knots; which will sufficiently shew the strength and set of the current about this part of the Coast of Zeloan.

CLXXVIII. *Of the GREAT BASSES, the ELEPHANT, LITTLE BASSES, CHIMNEY and PAGODA HILLS.*

The Great Basses are a cluster of rocks, extending about 1½ mile in length, and as much in breadth: the sea breaks very high on them, and some of them are a considerable height above water. You must give them a good birth, and come no nearer them than 34 or 35 fathoms, or, in the night, than 40 fathoms. They lie about 3 leagues off shore. It is said there is a channel within them. The latitude of the Great Basses is 6° 10' N and longitude 81° 45' E. from London; the variation 25' easterly, for 1760.

The Elephant is a remarkable high rock near the sea, and serves as a sea-mark, &c. for there being no other hill or rock near, it is very conspicuous; and, as its situation is close to the sea, it may be seen at a great distance either from the northward or southward. It bears from the Great Basses N½W. about 3 leagues.

When the Great Basses and Elephant were in a line, N½W. about 3 miles from the Basses, we had 35 fathom water, coarse brown sand, with shells. Chimney Hill then bore NNE. about 4 leagues. When the Elephant and Great Basses were in a line distant from the Basses 5 or 6 miles, we had 38 fathoms, coarse brown sand with shells. The Elephant bearing N½E. and the Great Basses NbE½E. 4 or 5 miles, distance off shore about 3 leagues, we had 39 fathoms, brown sand and shells. We sounded every quarter of an hour, and, as we were standing WNW. the next cast had 25 fathoms; then

14 fathoms, brown sand: tacked ship to the southward, the Great Baffles bearing NNE. 4 or 5 miles, and the distance off shore 5 or 6 miles. I would therefore advise the keeping further off shore hereabout. The Elephant NbW. about 5 leagues, we had 50 fathoms, brown sand. The Great Baffles N $\frac{1}{2}$ E. about 3 leagues, we had 34 fathoms, dark-grey sand.

By working the course and distance from the Great to the Little Baffles, by steering NE $\frac{1}{2}$ E. and SW $\frac{1}{2}$ W. you sail no further from one than the other, and consequently they bear thus one from the other; the distance about 7 leagues. You may coast it along between the Baffles, about 3 $\frac{1}{2}$ or 4 leagues off shore, in 35 or 36 fathoms water; though there is no trusting to soundings hereabout.

The Little Baffles are rocks under water, no part of them being seen; but the sea generally breaks on them very high. Should the sea be so uncommonly smooth as not to break on them, keep the Elephant W $\frac{1}{2}$ or $\frac{1}{2}$ N. until you bring Chimney Hill to bear WNW $\frac{1}{2}$ W. you will then be clear to the northward of them. By the appearance of the breakers they may be about a mile in length, and as much in breadth: they seem to lie about 2 or 2 $\frac{1}{2}$ leagues from the shore; are the more dangerous as there is deep water close to them, having no ground with 30 fathoms, and the next cast 16 fathoms, within half a mile of the breakers.

To know when you are near the Little Baffles, there is a pretty high peaked hill on the shore, near the sea, without any other hill near it; on the north side of which, near the top, there is a remarkable rock, resembling a chimney, which occasions its having the name of Chimney Hill. When Chimney Hill is on with the Breakers of the Little Baffles, it bears exactly NW. and when the breakers of the Little Baffles and the Elephant are in one, they bear W $\frac{1}{2}$ S.

When Chimney Hill bore WbN. and the Little Baffles SW. distance off shore 7 or 8 miles, we had 19 fathoms water; tacked to the eastward, and made our way about ESE. 4 miles, and had no ground with 50 or 60 fathoms of line; at the same time tried the current, and found it set SWbW. 1 $\frac{1}{2}$ knot.

A little to the northward of the Chimney Hill, and in-land, is another hill, not quite so high, which has upon the top, or near the top, on the north side of it, a rock rising up in the same manner as that on Chimney Hill, but much larger, resembling a pagoda, or rather a castle. It is not to be distinguished from other hills, but by this mark. When Chimney Hill bears NW. it is then touching the north foot or part thereof; and when Chimney Hill bears

bears NW $\frac{1}{2}$ N. The Pagoda Hill is shut in with it. The land hereabout is an high broken land ; it hath many hills, and is mountainous.

CLXXIX. Of JULIUS NAVE, the FRIAR'S HOOD, FALSE HOOD, AGUIN PEAK, and BATACALO RIVER.

There is an high white sandy point, close to the sea, called Julius Nave, bearing about NNW $\frac{1}{2}$ W. from the Little Baffes, and distance about 3 or 3 $\frac{1}{2}$ leagues.

There are a great number of remarkable mountains in-land on this part of the Island Zeloan ; but the highest, and most remarkable, is called the Friar's Hood, on account of its resembling, at its extremity, a friar's hood ; but it makes only in this form whilst it bears from W. to S. When it bears NW. or WNW. its peak is like the top of a pyramid.

The Friar's Hood is a part of Zeloan, which ships often fall in with, and as often take their departure from : the latitude is 7° 16' N. in 22 fathoms, about 2 or 3 leagues off shore, and the Friar's Hood bearing nearly west. The longitude of the sea-coast, in the parallel of the Friar's Hood, is 82° 8' E. from London. The current set SbE. 1 knot. The variation was 35' easterly in 1760.

There is another mountain southward of the former, which is not quite so high, and is called the False Hood, as it bears a great resemblance to the true Hood, and is sometimes mistaken for it.

Being 4, 5, or 6 miles off the Little Baffes, you may steer NNE. 9 or 10 leagues, keeping in 30 to 25 fathoms. This course and distance will bring you a-breast of a hillock, near the sea-side, called Aguin, or Aganis Hill, which has a small peak like a tower ; and a little to the northward of the said peak, but further in-land, lie 2 small hummocks near each other.

Aguin is the last high land you see near the sea, until you come to Trin-kamalay ; the land all the way between them being one entire low and flat plain, both to sea-ward and in-land. Nothing remarkable is to be seen but the Sugar-Loaf Hill, which is a great way in the country, and seems to be in the middle of the plain. Two other small hills are much farther in the country than the Sugar-Loaf.

When the Pagoda Hill and the Peak of Aguin are in one line, WbS. distance off shore about 3 leagues ; the extremes of land to the northward bore N $\frac{1}{2}$ W. and we had 20 fathoms water.

Being 2 $\frac{1}{2}$ or 3 leagues off Aguin Peak, you may steer N $\frac{1}{2}$ E. or a N. course, along shore, in between 20 and 25 fathoms water. The distance from Aguin

Peak to Batacola, is 18 or 19 leagues; you find nothing remarkable between them, the land being all extremely low and flat, as above mentioned. The currents hereabout little or none; sometimes setting to the northward, and sometimes to the southward.

You may coast it along shore, from the Little Baffles to Batacalo River, at the distance of 5, 6, or 7 miles; and have soundings from 40 to 30, and from 30 to 20, and sometimes 17 or 18 fathoms; but mostly between 25 and 30 fathoms.

No regard should be paid to the irregular soundings in this part of the Island Zeloan, There are holes in several places, having from 18 to 20 fathoms, and suddenly to 60 or 70 fathoms; sometimes 100 fathoms, or perhaps no ground; and afterwards in 2 or 3 casts, to 40, 30, 25, or 20 fathoms. Those who coast it about this island, ought to observe this, and not to be surpris'd at it, nor at the currents, which sometimes set on shore, as well as off shore.

Batacalo is known by the mouth of a small river, which you cannot see till you are to the northward of it. It is very narrow, turns short round to the southward, and is parallel to the beach along shore. On the north side of the entrance, the Dutch have a small factory-house, with a flag-staff on it, by which also this place may be known. The land hereabout is very low. When the Friar's Hood bears SW $\frac{1}{2}$ W. you are off Batacalo.

I have pass'd Batacalo several times in the day-time, within 2 or 3 miles of it, and had 19, 20, and 22 fathoms water, but saw nothing of the reef that both the English and French talk so much of. We kept our lead constantly going, and a good look-out with fair weather and smooth water; yet saw nothing of it.

CLXXX. Of VENDELOS BAY, *the SUGAR LOAF*, PROVEDIEN ISLE, FOUL POINT, TRINKAMALAY BAY, PIGEON ISLAND, and MÖLLE WALL.

From Batacalo to Vendelos Bay, the coast lies NWbN. distance about 9 leagues; the land between them is low and woody. Small ships may coast it in 10 or 12 fathoms; but great ships must keep out in 20 or 25 fathoms, 2 or 3 leagues off shore; this will carry them clear of all danger.

Vendelos is a small bay, on the north side of a steep rocky point of land: it may be known by a small hillock, which lies a long way in-land, and seems to be in the middle of the plain, as before mentioned: this hillock is called the Sugar Loaf, from the great resemblance it has to the top of a sugar-loaf broke off. When the Sugar-Loaf bears W $\frac{1}{2}$ S. you are off Vendelos Bay.

Southward

Southward of the Sugar-Loaf, at some distance, are 2 or 3 other hillocks; but they are further in the country, as before mentioned.

Ships bound to the northward in the SW. monsoon, should keep this coast close on board; for, if once they get off from the land, they will not easily regain it. In shore hereabout is little or no current; but if a ship once gets off from the land, she will find a strong current setting to the NNE. which will prevent getting hold of the land again.

From Vendelos Bay to the Island Provedien or Providence, the course is NNW $\frac{1}{2}$ W. or NNW $\frac{1}{4}$ W. 3 $\frac{1}{2}$ leagues: the land between them lies rounding in a bight; and the ground all along foul, which makes it bad anchoring. Hereabout the soundings are irregular, shoaling or deepning 2 or 3 fathoms at a cast. In shore here, the bottom rocky, and the soundings irregular, from 22 to 17 fathoms, 4 or 5 miles off shore. Keeping in between 20 and 24 fathoms, 2 or 3 leagues off shore, carries you clear of all danger.

The Island Provedien is a white rock close to the shore, and makes like the sail of a sampan; so that it may be easily known. It appears like a sail when 3 or 4 miles off it. The coast hereabout is low and woody; to the sea-ward it is steep; iron-coloured rocks. The coast continues foul for 3 or 4 leagues further to the northward.

From the Island Provedien to the SE. point of the great Bay of Trinkamalay, (sometimes called Foul Point, or the Point of Cataris) the course is NNW $\frac{1}{2}$ W. distance 7 or 8 leagues. The coast is low and woody, and there is a fine white sandy beach all the way between these places. By keeping in from 18 to 22 fathoms, 3 or 4 miles off shore, you go clear of all danger.

From Batacalo to the SE. point of the great Bay of Trinkamalay, or Foul Point, the coast lies NNW $\frac{1}{2}$ W. distance 18 or 19 leagues. Being 3 or 4 miles off Batacalo, by steering this course it will carry you clear of all danger; or keeping in between 20 and 25 fathoms, you will pass 3, 4, or 5 miles from the shore.

Foul Point is low and even, covered with trees. Three or four leagues to the southward of this Point is good \rightarrow age, about 2 miles off shore, in 14 or 15 fathoms water; and no danger if you go into 10 or 12 fathoms. A clear sandy bottom from 4 leagues all the way to the point. From Foul Point there is a dangerous shoal runs out to the NNE. at least a mile and a quarter, being all rocky and foul ground, which gives it the name of Foul Point. Come no nearer this Point than 14 or 15 fathoms. When round Island is a sail's breadth open to the southward of Marble Point, you are clear of all danger off Foul Point.

From

From Foul Point to the Flag-staff Point at Trinkamalay, the Coast is NW $\frac{1}{2}$ W. distance 8 or 9 miles. You will carry soundings from Foul Point $\frac{1}{3}$ of the way toward the Flag-staff Point from 15, 20, 30, 35, and 40 fathoms; then no ground, until you come within a mile of the Flag-staff Point, when you will have soundings at 45 or 50 fathoms, and shoal gradually as you approach the shore.

The Flag-staff Point at Trinkamalay, is a very high, steep bluff point; at the top thereof the Dutch hoist a flag, which may be seen a great way at sea. There is no danger near this point: you have 17 or 18 fathoms within a ship's length of it.

Being 3 or 4 miles to the eastward of the Flag-staff Point, a NNW course will carry you clear of Pigeon Island, which you may pass at 2 or 3 miles distance, in 22 or 23 fathoms. The distance between Flag-staff Point and Pigeon Island is 12 or 13 miles.

From the land a-breast Pigeon Island to Point Pedra, the coast lies NWbN. a little westerly, distance 25 or 26 leagues; the coast low and even, covered with trees; and good clear ~~+~~ing-ground all the way: but you must be careful of several shoals that lie off this part of the coast.

The shoal of Molle Wall lies 3 leagues off shore, with 3 and 2 $\frac{1}{2}$ fathoms water upon it. Between Molle Wall and Point Pedra there is another shoal, about 2 leagues off shore, with only 2 fathoms; and EbN. 2 $\frac{1}{2}$ or 3 leagues off Point Pedra, lies a dangerous rock, with only 9 feet water on it; also a bank of sand 3 $\frac{1}{2}$ or 4 leagues off shore, with very unequal soundings on it. It is dangerous for ships to come near it; therefore you should be very cautious in sailing along this part of the coast, and keep your lead constantly going.

From Pigeon Island, to clear the shoal of Molle Wall, the course is NNW. 10 or 11 leagues, taking care to keep in from 18 to 20, 22 or 24 fathoms. Having run NNW. 10 or 11 leagues, and you are in 19, 20, or 22 fathoms, you may then steer NNW $\frac{1}{2}$ W. or NWbN. 14 or 15 leagues, according as you find you deepen or shoalen your water, taking care to keep in from 20 to 24 or 25 fathoms; having as much regard to the depth of water as the course steered. The above course, distance, and depth of water, will run you clear of all danger from, and bring you a-breast of Point Pedra.

CLXXXI. *Of POINT PEDRA and NEGAPATNAM.*

Point Pedra is very low land, with only shrubs and brush on it. It runs out into the sea in such a manner, that at some distance it looks like the wrecks
of

of old ships in the water. In this manner I have seen it very plain from the deck; (being becalmed a little to the southward of Point Pedra) we had no ground with 100 fathoms of line; but sailing, in half an hour we had 50 fathoms, and then 40 fathoms. Soon after there coming on a light air at north, we stood WNW. 4 miles, and had from 40 to 30, 20 and 15 fathoms, and when in the latitude of about $9^{\circ} 30'$ N. the extremes of the land bore from WbN $\frac{1}{2}$ N. to S. distance off shore about 3 leagues: we then steered out NNE. till we deepened our water to 20 fathoms: then steered NNW. till we had 26 fathoms: then NNW $\frac{1}{2}$ W. till we had 30 fathoms: then steering NW. and NWbW. for Negapatnam, had no soundings.

The latitude of Point Pedra is $9^{\circ} 48'$ N. the longitude $80^{\circ} 31'$ E. from London; the variation $25'$ easterly, 1760.

Being a-breast of Point Pedra, in 20 or 24 fathoms you will soon deepen your water to 28, 30, 35, 40 and 50 fathoms; and then no ground. When you have deepened your water to 30 or 35 fathoms, you may haul up NW. or NWbW. in order to get hold of the Coromandel Coast, about Negapatnam; and about mid-way you will lose soundings. The course and distance between them is N 42° W. 27 or 28 leagues.

In crossing from Zeloan to the Coast of Coromandel, ships should be very careful to keep well to the westward, and make the land about Negapatnam, on account of the westerly winds which blow very strong off this Coast, in the SW. monsoons, and prevent ships making the coast; and frequently very strong northerly currents will horse a ship to the northward in a surprising manner. Many ships, by not observing this precaution, have been driven to the northward of their designed port, before they could get hold of the coast; by which means they have lost a great deal of time, and have been put to many inconveniencies.

We always, by observing the directions above, fell in exactly with Negapatnam. I have seen from the deck, the flag on the high black pagoda, a little to the northward of the town, called the Chinese Pagoda, in 14 or 13 fathoms, bearing WNW. 5 or 6 leagues: this is the first thing to be seen near this part of the coast, the land being very low, though it is covered with trees. To the southward of the town is a thick wood, higher than the rest of the trees along this part of the coast.

The highest of the five pagodas, which are to the northward of Negapatnam, is very high, and being white, may be seen a great way at sea. I have seen it much about the same distance as the former, bearing WNW. in 14 fathoms; when

when first seen, they look like so many sail of ships. I have seen the land about Negapatnam, from the mast-head, in 35 fathoms. Without 40 fathoms you have no soundings; and from 36 to 40 fathoms, or no soundings, it is not more than 2 or 3 miles.

Negapatnam is the most considerable place belonging to the Dutch on the coast of Coromandel; it has a considerable trade, though very few vessels belonging to the place. The fort is a square, regularly fortified; and has a good ditch, with water, surrounding it. The town lies to the northward of the fort; and to the southward of the fort is the mouth of a small river, capable of receiving small country vessels. On the north side of the entrance of this river is a battery of 14 guns, to which boats, that enter the river, must go within the length of their oars; and the landing place is close to it. There is a bar at the mouth of the river, which, in bad weather, breaks very much, and makes it dangerous for boats to go over it.

We used to \rightarrow in Negapatnam Road in 7 fathoms, clear and good holding ground; the flag staff bearing $W\frac{1}{2}S.$ and the highest of the five pagodas $NW\frac{1}{2}N.$ off shore $2\frac{1}{2}$ or 3 miles. The watering-place is about $\frac{1}{2}$ a mile up the river, at a great tank, entirely commanded by the fort. It would be both troublesome and tedious watering here, without the assistance of the natives, and their boats. Fresh provisions for present use may be had here, with other refreshments, vegetables, fruit, &c. sufficient to supply a squadron of men of war; but no kind of sea provision, except rice; and fire wood is a scarce article. The latitude of Negapatnam is $10^{\circ} 50'N.$ and longitude from London, $80^{\circ} 0'E.$ the variation $30'W.$ 1760.

The shore is very flat off Negapatnam. I have been told, that when Negapatnam Flag-staff bears $NNW.$ about 3 leagues, there is a shoal with only 3 fathoms water on it: I never could find it; it is best to keep your lead going, and a good look-out. There is less current off this part than any other of the Coast of Coromandel; the current generally goes with the wind, and increases as you go to the northward.

CLXXXII. *Of CALDEROON, KARYCAL, TRANKABAR, and PORTA NOVA.*

From Negapatnam to Calderoon the coast lies north and south, 13 or 14 leagues; is low, woody, and all the way free from danger, till you come to Calderoon; with regular soundings as you approach the shore. There are no soundings without 45 and 50 fathoms: beyond that depth the bank goes off suddenly to no soundings. In that depth you will be 6 or 7 leagues off the land.

land. In 40 fathoms you will be about 5 leagues off; and it shoals gradually toward the shore to 10 or 11 fathoms; then you will be about 3, 4, or 5 miles off shore. You may coast it all the way in 11 or 12 fathoms, at about 2 leagues off shore, till you come to the reef of Calderoon; then you must keep out in 14 or 15 fathoms, there being 12 fathoms close to the reef.

About 4 leagues northward of Negapatnam is the river Karycal, where the French had a settlement, which was taken by the English in the year 1760. It has a very high flag-staff, by which it may be known.

Two leagues to the northward of Karycal is Trankabar, the chief settlement belonging to the Danes in the East-Indies. The fort is remarkably white, by which it may be known at a distance.

In sailing along shore to the northward, between Trankabar and Calderoon, you will see two small pagodas near each other, in-land, up in the country.

Calderoon is known by a thick bushy wood, close to the sea, which appears higher than any of the land thereabout. At a distance at sea it appears like a low island, whose greatest height is in the middle, and its extremities low; by this it may be known.

At the back of Calderoon Wood are 4 very large high pagodas, called the Chalambarang Pagodas. These pagodas, when they appeared just touching the south part of Calderoon Wood, bore W. N. at the same time we had 25 fathoms about 3 leagues off shore. When they appeared on the middle of the wood they bore due West, by which Calderoon may be known; but, if you are well in shore, the wood will prevent your seeing the pagodas, till you open them to the northward; then they will bear WbS;S.

The north part of Calderoon Wood forms a point of land, occasioned by the River Divecotei coming out here, especially when you come from the southward, and sail near shore; because the coast, whose direction was hitherto North, forms an elbow here, and trenches away NNW. $\frac{1}{2}$ W. and NWbN. 3 $\frac{1}{2}$ leagues as far as Porta Nova.

From the mouth of Divecotei River extends a bank or shoal, which reaches 4 $\frac{1}{2}$ or 5 miles from the shore, and stretching along to the southward, joins to the shore about the south part of Calderoon Wood; this is called Calderoon Shoal. This shoal is steep to and dangerous; so that from 11 or 12 fathoms you will, in some places, fall suddenly into 3 or 4 fathoms. I have several times stood well in with this shoal, and had a good view of it: a great part of it is dry, and the sea generally breaks very high upon it. I have stood in

the day-time into 11½ or 12 fathoms, seemingly about a mile from it; and a sloop, a small distance a-head of us, had only 4 fathoms, on which we tacked immediately. I would not advise a great ship to come nearer this shoal than 15 or 16 fathoms in the night, nor 13 or 14 in the day.

His Majesty's ship Falmouth narrowly escaped being lost on this shoal, in the night: they were standing in for it, and intended to tack in 12 fathoms; but missing stays, they were in 4½ fathoms before they could put about, and were obliged to ⇨: in the morning, the weather being moderate, they warped off, and came to sail.

I have been in 11½ fathoms about 1½ mile off the north part of this shoal, when the flag-staff at Porta Nova bore WbN½N. and the two middlemost of the four Chalambarang Pagodas in one, WSW. Then I could see numbers of black people on the shoal, fishing. This is a pretty good mark for the north part of this shoal: but a ship bound into Porta Nova must bring the two middlemost pagodas open to the northward, to bear WSW½S. and at the same time Porta Nova flag-staff WbN½N. Then you are clear to the north part of the shoal (which lies about 5 miles off shore) and may hawl it in for Porta Nova; or, if in 18 or 20 fathoms, you may hawl in for it when the flag-staff bears WNW. and when the southernmost of the Chalambarang Pagodas is on with the south part of Calderoon Wood, you then are a-breast of the south part of this shoal; but this does not lie far off shore. Note, the water shoalens faster on standing in toward Calderoon, and deepens faster in standing off it, than any other part of the coast.

Porta Nova is an Indian town of considerable trade, where the Dutch have a factory, on which they hoist their flag. Here is a small river navigable only for small country vessels: fresh water is filled out of a tank, a little way up the river; but it is bad and brackish, as several of our men of war experienced. They came up from Cuddalore to this place to water; but found the bad effects of it, from its giving the people the flux.

Porta Nova Road is by much the smoothest and safest on all the Coromandel Coast; so that there is little or no current in this road: the bottom is clear; muddy, and good holding ground. Its smoothness is occasioned by the Calderoon Shoal, to the south-eastward, which shelters it from the great swell that you find in every other part of the coast.

You may ⇨ in Porta Nova Road in 6 fathoms water, the flag-staff at Porta Nova W½N. and the southernmost of the 4 pagodas at Chalambarang SW½W. off shore 2 miles. The latitude of Porta Nova is 11° 32' N.

CLXXXIII. Of FORT ST. DAVID'S and CUDDALORE.

From Porta Nova to Fort St. David's (belonging to the English) the coast lies NbE. 6 leagues: you may coast it along shore hereabout in 8, 9, or 10 fathoms, about a league off shore. A little to the northward of Porta Nova begin the white sand-hills, which extend along the coast near the sea. At a distance this part of the coast resembles several islands, the sand bank near the sea being higher than any other part of the coast, which is exceeding low.

About 3 miles to the southward of fort St. David's are the town and river of Cuddalore. The river is shallow, with a bar, fit only for boats to enter.

We lay several months in Cuddalore Road, during the blockade of Pondicherry, and ~~4~~ 5 fathoms, clear and good holding ground; Cuddalore Bar WSW. the flag-staff NWIN. the ruins of Fort St. David NNW. W. off shore 1½ mile; the current setting to the northward at the rate of a mile an hour, as it always does off this place in the SW. monsoon. Here we were supplied with plenty of fresh provisions, vegetables, fruit, and other refreshments.

The latitude of Fort St. David's is $11^{\circ} 48' N.$ longitude, $80^{\circ} 5' E.$ from London; and the variation $30' W.$ 1760.

From Fort St. David's to Pondicherry the coast lies NNE½E. 4½ leagues. You may coast it along between them in 10, 12 or 14 fathoms, 4, 5, or 6 miles off shore. In the offing you will have from 38 to 40 and 42 fathoms, 5 or 6 leagues off shore, and without that no soundings. There is nothing remarkable between them; to seaward the land is low and sandy, and woody in-land.

From Fort St. David's to Sadras the coast lies NNE½E. 21 leagues.

CLXXXIV. Of PONDICHERRY, SADRAS, ALEMPARYA, the SEVEN PAGODAS, COVOLAM, and ST. THOMAS.

Pondicherry has been the chief of the French settlements in India, the residence of the governor-general and head council, and, before it was destroyed by the English, was by much the largest and most beautiful European settlement in India, affording a most delightful prospect from the sea. The latitude of Pondicherry is $11^{\circ} 56' N.$ and longitude, by several astronomical observations, $79^{\circ} 57' E.$ from London; the variation $30' W.$ 1760.

Some distance in-land, there is a remarkable black land on a flat hill, with a grove of trees on it, higher than any other part of the coast or country

hereabout, which is the first thing you will see on this part of the coast coming in from the sea, and by which you may know Pondicherry: we called it the Tuft of Trees in-land from Pondicherry. When on with the middle of Pondicherry, bearing $W\frac{1}{2}N$. $2\frac{1}{2}$ or 3 leagues we had 15 fathoms, and WbN . 5 leagues, we had 38 fathoms: there are no soundings without 40 or 42 fathoms, then the bank goes off very suddenly.

The French ships generally anchored right off the town in 7 or 8 fathoms, about $\frac{1}{2}$ of a mile, and small ships in 5 or 6 fathoms, $\frac{1}{4}$ a mile off shore. We anchored in 10 fathoms, the flag-staff $W\frac{1}{2}S$. and the tuft of trees on the high land at the back of Pondicherry WNW . off shore $2\frac{1}{2}$ miles; the bottom clear, and good holding ground.

In June the current sets NbE . 1 knot, sometimes more or less. To the northward of this place, and close to the north bastion, is the entrance of a river capable of receiving pretty large country vessels over its bar, which makes it very convenient for trade.

From Pondicherry to Sadras the coast lies $NNE\frac{1}{2}E$. distance 16 leagues: the coast is low, with some sand hills, and in-land it is woody.

About 9 leagues to the northward of Pondicherry, on the same course, are the ruins of Alem-Parva, formerly a French settlement, but destroyed by the English. You may coast it along to Alem-Parva, in 10, 12, or 14 fathoms, 4, 6, or 8 miles off shore; in the offing 38, 40, or 44 fathoms, 5, 6, or 7 leagues off shore; and without that, no soundings: the bottom sand and gravel.

From Alem-Parva you may see the high land of Sadras, a chain of high mountains (some of which are very ragged) up in the country at the back of Sadras: the coast between them lies $NNE\frac{1}{2}E$. 7 leagues. You may coast it along shore in 10, 11, or 12 fathoms, at 5, 6, or 7 miles off shore. In the offing you have from 30 to 40 and 45 fathoms, coarse brown sand and gravel, 5 or 6 leagues off shore. The high land of Sadras NW . 4 or 5 leagues; 30 fathoms. The flag-staff WSW . 3 leagues; 25 fathoms. The flag-staff $NW\frac{1}{2}N$. 3 or 4 leagues; 30 fathoms. No soundings without 45 fathoms.

When the south part of the high land of Sadras bears NW . then Sadras bears W . About $2\frac{1}{2}$ or 3 leagues to the southward of Sadras, there is a thick wood extending about 2 or 3 miles to the northward: off this wood the water is shoaler than to the northward or southward thereof: it is best therefore to keep a little further off shore hereabout, in 11 or 12 fathoms.

About 5 or 6 miles to the northward of the above wood there is another thick wood, which (as you come from the southward) seems to run out into

the

the sea, and form a point of land. From the southern part of this thick wood you may see Sadras (a Dutch settlement) with a high flag-staff, which shews the flag over the trees, and may be seen a long way at sea. Were it not for this, Sadras would not be easily discovered, on account of the thick wood that surrounds it.

From Sadras to Madras the coast lies NbE. 12 or 13 leagues: the land near the sea is low and woody, but several high mountains in-land.

The coast from Sadras to Covolam, and to the northward thereof, is steeper to, and has deeper water than off Sadras, or southward of it. You may coast it along shore from Sadras to Covolam in 20, 22, or 24 fathoms, 4, 5, or 6 miles off shore; in the offing you have from 30 to 40 fathoms 4 or 5 leagues off shore; and without that no soundings.

About 2½ or 3 leagues to the northward of Sadras are the Seven Pagodas, which are thus situated: there are 2 pagodas near the sea, 4 in the valley near the foot of the southernmost high land, and one on the very pitch thereof. The sight of those in the valley is often intercepted by the woods, especially when they bear about West.

From the Seven Pagodas to Covolam the coast lies NbE, a little easterly, distance 5 leagues. You may coast it along shore between them in 18, 20, 22, or 24 fathoms, at 4, 5, or 6 miles off shore. In the offing you have from 30 to 40 fathoms, at 4 or 5 leagues off shore; and without that no soundings. Covolam is a Portuguese factory-house, on which they hoist their flag: and the house is very white; by this it may be known.

From Covolam to the town and church of St. Thomas the course is as the coast lies, NbE. 3½ leagues. This also is a Portuguese town, situated close to the sea; and the church stands quite upon the beach, by which it may be known. You may coast it between them in from 20 to 15 or 14 fathoms distance from 6 to 3 miles off shore. In the offing you have from 30 to 40 or 44 fathoms, at 4, 5, or 6 leagues distance; and without that, no soundings.

In-land there are high mountains, the northernmost of which is the lowest, and is known from any others round it by being a lower and flatter hill, with a church built at the top of it, which is plainly to be seen, sailing along shore: this is called St. Thomas's Mount.

From the town or church of St. Thomas to Madras the coast lies NbE 3 miles. You may coast it in 10, 11, or 12 fathoms water, 2 or 3 miles off shore. About half way between them is a remarkable high black pagoda.

CLXXXV. *Of MADRAS or FORT ST. GEORGE, and PULLICAT.*

Madras, or Fort St. George, is the chief English settlement on the Coromandel Coast, the seat of a superior governor and council, and very well fortified. It is a place of great trade, though few or no ships belong to it, and is divided into the White and Black Town; the former of which is small, but well built, and stands within the walls of the garrison; the Black Town is considerably larger, and lies to the northward of the fort. Here a small river, over which there are two bridges, empties itself to the southward of the town, forming an elbow in its course from the northward; whereby it surrounds most part of the fortifications: this adds greatly to the strength of the place. The watering-place is about $1\frac{1}{2}$ mile to the northward of the fort; but your ship must be watered by country boats, as none other can land, on account of the great surf; and they are often overset in it.

The latitude of Madras is $13^{\circ} 12' N.$ its longitude is $80^{\circ} 32' E.$ from London. and the variation was $25' W.$ 1760.

The road is bad and open: you lie there exposed to all winds that blow, with a large swell perpetually rolling in upon the shore; which makes ships labour very much in this road. The best marks for \rightarrow ing are, the flag-staff and the cupola of the town-clock in one, NWbW. St. Thomas's Mount SW $\frac{1}{2}$ W, and the high black pagoda WSW. in 10 fathoms, off shore $1\frac{1}{2}$ or 2 miles. The bottom is muddy, and good holding ground; but further to the northward it is reckoned foul, there being many wrecks, lost anchors, &c. I have known many ships spoil their cables in this road. There is generally a northern current in the SW monsoon, and a southern one in the NE. monsoon, at some times running very strong, at others little or none.

Here is to be had plenty of all sorts of provisions and refreshments for a fleet of men of war, or other ships. The country hereabout is extremely beautiful, pleasant and plentiful, and affording a charming prospect; but wood is a very scarce article. The landing place is at the sea-gate; but the surf breaking very high on the shore, makes it very dangerous landing, the surf being greater here than at any other part of the Coast of Coromandel. The manner of landing is thus: the ship's boat \rightarrow 's just without the surf, where what we call the bar-boats come, take out the passengers or goods, carry them through the surf, and bring them on shore. These boats are sometimes overset, the people drowned, and goods lost.

As at this time we went no further to the northward on the Coast of Coromandel; and, according to my original design, not intending to give any description

description of those parts where I have not been; yet, as in a succeeding voyage, from Diego Rayes to Madras, we fell in with Pullicat, off which there is a very dangerous shoal, I shall therefore in this place proceed to give some account thereof, and so conclude this description of the Coast of Coromandel.

From Pullicat to Madras the coast lies SbW½W. distance 7 or 8 leagues. You have from 18 to 14 fathoms water, 3 or 4 miles off shore; and from 30 to 35 fathoms, sandy ground, 3 or 4 leagues off shore. The land near the sea is low and woody; though in some places, the trees (being pretty high) make the land appear, at a distance, like hillocks or very broken land. Inland there are very high mountains, called the High Land of Pullicat; they are at a great distance from it, and not to be seen in hazy weather.

The flag-staff at Pullicat is very high, and when the flag is hoisted, it may be seen 4 leagues. When the high land of Pullicat bore WbS. and the extremes of land from WSW. to WNW. off shore about 4 leagues, we had 36 fathoms; and when the flag-staff of Pullicat bore WSW½W. about 3½ or 4 leagues, we had 30 fathoms. The latitude of Pullicat is 13° 40' N. the longitude 80° 38' E. from London; and the variation was 42' W. 1760.

There is a dangerous shoal off Pullicat, with only 15 or 16 feet water on it; and the outside steep to. I once ⚡ed in the night off this shoal, in 10 fathoms, having shoalened it suddenly from 12 fathoms; and imagining we were coming on the shoal, we veered away ¼ a cable (the wind being easterly) and had but 8 fathoms. In the morning, at day-light, sent the boat a sounding on the shoal, and found (a cable's length within where the ship lay) no more than 3 fathoms; the distance from 12 to 3 fathoms was not 2 cables length.

A great ship should not come nearer this shoal than 13 or 14 fathoms.

If you have a leading gale, you may clear the north part of this shoal by keeping the flag staff off Pullicat WbS. but if the wind should be northerly, it will be necessary to allow it a larger birth, and steer in WSW. You may ⚡ in 5½ or 4½ fathoms water, muddy ground; 1½ or 2 miles off shore, the flag-staff bearing from WbS. to WSW.

Here ends Mr. Nicholson's Description of the Coromandel Coast.

*Of the Coasts of Arrakan and Ava***CLXXXVI. *Of the EASTERN COAST of the GULF or BAY of BENGAL, ARRACAN RIVER, and the NEGRAILLE ISLES.***

From Sagor isle to Chittigong, the coast is exceeding low; or rather it is a chain of islands formed by the different mouths of the Ganges, which spread over the northern coast of the Bay of Bengal. These islands are surrounded with very dangerous banks, which extend southward as far as $21^{\circ} 23'$ north latitude. There are between these banks and islands several passages, which are not frequented, because most of the rivers are subject to such a sudden rise of water, that, as soon as the flood makes, it rises in a wave or bohr, several feet in an instant.

A small Portuguese ship, drawing 10 or 12 feet water, got into one of these passages; and after many attempts, it was lucky enough to find its way into the Ganges, by the River Rangafoula.

The islands that border upon these banks are barren and uncultivated; they have no water but the overflowing of the sea. The crews of ships, escaped hither from shipwreck, have been ready to perish with hunger, necessity obliging them to feed on the pith of reeds; and it was not till they had endured many fatigues and distresses, that they at length arrived at places inhabited.

The danger of approaching this coast, is the reason why navigators have not attained any farther particulars of it. As to those of the river Chittigong, the relators do not essentially agree amongst themselves.

From Chittigong to the river Arrakan is computed 50 leagues SEbE. The hazard there is in trading with the people of Arrakan (its government being very anarchical) makes this coast little frequented, and consequently not much known. It is only known, that 10 leagues SE. from Chittigong is a bank extending 5 leagues from the shore; and that from this bank, for the distance of 25 leagues, the draughts do not describe any danger.

This shoal, according to the charts, stretches to the south-westward from the north point of a river, which, according to M. d'Anville, is Shatigan (or Chittigong) River. M. d'Apres seems to understand the great river to the north-westward of this, to be the River of Chatigan, which, according to M. d'Anville, is the great branch of the Ganges.

The rivers which empty themselves hereabout, are neither considerable nor navigable. At the end of this extent begin the banks, which continue along the

the coast, as far as the mouth of Arrakan River. The edge of that which projects the farthest, is 6 leagues from the land to the westward of Mawhill, situate on the north side of the river of that name. That to the southward is formed by the island of Badremacan, which makes the north point of Arrakan river; and that of Maw is one of its mouths.

To go into the River Arrakan, you must make the Broken Island in latitude $19^{\circ} 47' N.$ in order to avoid the banks to the southward of Point Badremacan. Off Broken Island, you have regular soundings, which gradually decrease to 7 fathoms. You continue to coast this island as far as its NW. point; there you may \rightarrow , and wait for a pilot, if you want to go up the river.

To the SE. of Broken Island the coast forms a considerable bay, full of different sized islands, the farthest and southernmost of which is Cheduba isle. From this to Point Negrais or Negraille is 55 leagues.

Coming from the westward, and in sight of the south point of the great island Negraille, you make directly towards it, taking care (in approaching it) of the bank which projects a league from it to the WNW. For this it will be proper to have the lead near at hand, there being 4 fathoms close to it. You may coast it in 5 or 6 fathoms. The depth is not above 6 fathoms any where, between the south point of Great Negraille and Diamond Island, nor any less towards Diamond Island till within half a mile thereof. The bottom dark grey sand. This depth, round the south point, is known by a great rock, almost contiguous, and by a little pagoda, situate upon a hill. Without this remark, the discontinuation of the coast, and Diamond Island (which you may see at a distance) are sufficient to prevent your being mistaken.

You must continue to coast the south and east parts of this island, till you are athwart the NW. point of the Little Negraille or Deer Island; then you quit the larboard side and keep on the starboard, to round this point of the Little Negraille, within which you may \rightarrow , in 6, 8, or 10 fathoms water, off the low land. In this course come not too near the Great Negraille, on account of a sand bank (steep to) right off a bay full of trees, which are to be seen here. These instructions are by the *Sieur de la Touche*.

From the Little Negraille to Diamond Island, at about $\frac{1}{2}$ of the distance of one from the other, lies a shoal, pretty steep on the NW. side, which makes the entrance of the harbour dangerous, and obliges you for safety to coast along the Great Negraille, keeping in $6\frac{1}{2}$ fathoms, because in 7 fathoms you may run a-ground before you are aware. Thus it happened to the French king's ship, called *L'Indien*, commanded by *M. de Predine*, which was lost there in 1698; imagining, by the increase of the depth, that he was in the best channel.

Some pretend there is a channel between the south part of this bank and Diamond Island; but it seems not adviseable for any to go that way, even in a middling ship.

Coming from the eastward to enter Negraile, you pass $1\frac{1}{2}$ league to the southward of Diamond Island, without coming near it, on account of a reef, which runs off to the southward. Having doubled it, you must not be too hasty to gain the channel, lest you run on the SW. part of it. The best course is to keep along the edge of it, till you bring the south point of the Great Negraile to bear NE. then stand directly for it, and coast it as already mentioned. The ships that come from the S. or SW. are also to take notice of this paragraph.

The west side of the Little Negraile is low, filled with trees and bushes; the east side on the contrary is hilly, from whence descends good water. In the woods are elephants, wild buffaloes, stags, hogs, and several other sorts of animals.

CLXXXVII. *Of the Coast from the NEGRAILLE ISLES to SIRIAM RIVER.*

It is reckoned about 55 leagues from Diamond Island to the mouth of Siriam River. The coast (which runs EbS. and ESE. as far as Baragou River, and afterwards ENE.) is no more than a continuation of islands, separated by different channels and banks.

The bight of Martaban, which, according to the modern geographers, makes the principal mouth of the river Ava, is not well known; it is said to be exceeding dangerous, on account of several shoals, on which the sea rises suddenly 10 feet. The ships bound to Siriam should be cautious of the tides, which run there with great rapidity.

CLXXXVIII. *Of the ANDAMAN ISLES, and others in the GULF of BENGAL.*

The middle of the island Preparis is in 15° N. latitude, about 80 leagues to the westward of the Coast of Tenasserim; it extends about 3 leagues NNE. and SSW. At each end of it there is a little island, or rock, one of which lies 4 leagues off to the SSW. in such a manner, that these little islands, with the principal island, are in length about 9 leagues, from latitude $14^{\circ} 45'$ to $15^{\circ} 8' N.$ They are surrounded with rocks above water, upon which the sea breaks continually; this makes it very dangerous coming near them. The land of Preparis Island appears woody, pretty regular, and of a height to be seen 8 leagues off at sea in clear weather.

Fourteen leagues SWbS. from the south point of Prepara, you find the Cocos Islands. Their latitude, by observation, is $14^{\circ} 5' N$. They bear from the islands that encompass the north point of the Great Andaman, NE. 9 leagues. On the east side of the southernmost island, you may \rightarrow in a sandy bay, and get wood and water. Those who have been there, assure of their safety. The northernmost of these islands is a small distance from the others, and seems to afford a passage between them. In fine weather they may be seen 10 leagues. Captain Morris, in the Boscawen, \rightarrow ed at these islands, in January, 1763, about 3 miles of the NW. part of the southernmost islands, in 22 fathoms. He sent the boat to sound from the ship to the shore, which found regular soundings decreasing to 10 fathoms, within a mile of the shore. They landed on the west side of the island, in a fine sandy bay; but found the rest all rocky. They found wood here, but could not find any fresh water. Here are regular tides, flowing NNE. and SSW. The latitude of the southernmost island, and which is also the westernmost, they found to be $14^{\circ} 1' N$.

The Andaman Islands lie north and south, from $13^{\circ} 42'$, to $10^{\circ} 30'$ north latitude. They are divided into Great and Little Andamans, and are inhabited; but the savage disposition of the natives (who are said to be canibals) is the reason they are not frequented; and therefore we can have no exact description of them.

The Great Andamans are represented in all the charts as two large islands, separated by an arm of the sea. The navigators who have approached them, report that they are besides surrounded with a number of little ones, as well on the east as west side; and that there are, moreover, many apparent and hidden dangers. Between the Great and Little Andamans, that is to say, to the southward of the former, some say there is an exceeding fine passage for ships bound to the eastern coast; but we have no particular account thereof.

The north part of the Great Andaman, or rather that of the islands which surround it, lies in $13^{\circ} 42'$ north latitude. Between these and the Great Andaman is a passage, or channel, through which the ship *Le Pondicherry* sailed in her way to Pegu. The account the captain gives of it in his journal, shews that it is neither adviseable nor useful to follow his example, because the passage is exceeding dangerous, and you can reap no benefit by it. The best channel is between the Islands Cocos and these, which is 9 leagues from one to the other. The account is as follows.

The 22d of November at noon, we saw land: the most remarkable part was a low point extending to the northward, at the extremity of which we discovered some little islands. The Portuguese pilot, whom I engaged at Madras as a coasting pilot, was desirous of having a nearer view of them both; therefore we steered east for the above-mentioned point. At 5 P.M. we were two leagues from a small island; this the pilot called the Little Cocos. As night came on I judged it proper to put about immediately, and steer SWbS. to avoid entangling myself among these islands in the night-time, especially as there was the appearance of bad weather. At half an hour past six we sounded in 40 fathoms, fine sand: at nine, as it was almost calm, and fearing the tides might horse me too near the shore, I \rightarrow ed in 24 fathoms, red sand, $1\frac{1}{2}$ league from the low land, which lies at the foot of 2 great hills in land.

At 5 A.M. we weighed, with the wind at SW. and NNE. to open the channel: we then brought the cape to bear ENE. and EbN. to enter it, leaving the two hills and body of the land on the starboard side; and on the larboard several little islands (including the Little Cocos above-mentioned) which are all of a moderate height, even and woody, and seem, as you come from the southward, to stop up the passage; but by bringing them to the eastward, you open it, there being about two miles from one side to the other.

At noon the calm obliged us to \rightarrow in 25 fathoms, large gravel; the starboard point east about 2 miles; and that on the larboard, ENE; E 2 leagues. The whole afternoon it rained, the wind blowing very fresh at east, which obliged us to veer out all our gheer, to prevent our driving.

At 6 P.M. the wind being favourable, the pilot would needs weigh. The fear of some accident in the night-time, in a passage that appeared to me to be full of difficulties, made me endeavour to dissuade him from his design. He still persisted; assuring me that he was perfectly acquainted with the place, and said he had been through it ten or eleven times. I at last yielded to his solicitations, and weighed. We then stood for the passage, steering East, EbS. and EbN. by our soundings, which we found very uneven, and full of rocks on the Andaman side, sometimes in 22 fathoms, then 11, and then 5, following the stream of the tide, which set us very near the larboard island. This seems to be the island Cocos, as being the principal and largest island on the larboard hand, going to the eastward, and forming the northern part of the strait.

When you have entered the strait, the larboard side is somewhat safer than the other; though there are two or three rocks even with the water in the middle of the passage. At midnight the wind failing, and the tide against us, we \rightarrow ed, being

being about two-thirds through. At day-break I found myself about half a mile from the rocks just mentioned, which are above half way. There is one rock quite even with the water, and the other two somewhat higher toward the larboard island. There is a little cormorandiere, or quick-sand, on the starboard side, toward Andaman Island, from whence there seems to project a very dangerous reef.

As soon as the tides were favourable I weighed, and sailed through mid-channel exceeding quick, sounding in 15, 18, 25, and 30 fathoms. In going out we perceived 3 or 4 little islands on the larboard side: there are two in an opening, one of which is round, the other flat and very small, with three little islets at the end of it. Toward the great Andaman Isle, there is a large and round island, with many others extending to the southward. My coasting pilot told me the tide flowed at five o'clock, at each end of the channel.

You may see, on the east side of Andaman Island, as well as on the west, exceeding high mountains. At 6 P. M. when we were out, the larboard point bearing $W\frac{1}{2}N$. 4 leagues; that of the great Andaman $WbS\frac{1}{2}S$. the southernmost land in sight, SSW . 7 to 10 leagues; we saw two little islands to the leeward, which the pilot called the Great Cocos.

From what I could observe, he made us pass between the north point of the Great Andaman and the adjacent little islands. I would not advise any one to frequent this passage, especially at night, on account of the dangers wherewith it is filled. Thus far the Journal.

The latitude and situation of the Car-nicobar Islands, and some others about them, are but imperfectly known.

To the northward of Sombrere channel, you find several islands, between which it is not prudent to pass without a more perfect knowledge of them than has been yet attained. The journals of some ships that have passed there, mention several dangers: however, you may depend on the extent of the channel, as represented by the charts; although the latitude of the islands are not well known.

CLXXXIX. *Of the NICOBAR ISLANDS.*

The Nicobar Islands are situate south of Sombrere Channel: the southernmost is the largest, being about 9 leagues long; the northernmost is as extensive from east to west, but much less from north to south. Between these islands is a very good passage, about 6 or 7 leagues long, called St. George's Channel; it lies ENE and WSW . The biggest ships may pass through safely, if they keep mid-

mid-channel. At each end of this channel is a little island, which must be left to the southward either way. That on the west end has at its north point a reef, extending half a mile at least.

The passage between this little island and the southernmost Nicobar is too dangerous to be ventured upon. You ought also to fail to the northward of the other little island at the east end, on account of a reef in the middle of the channel, which may be seen to the southward, and which renders this passage dangerous.

The ships that sail in or out of the Straits of Malacca, and those that go from Acheen to the westward, generally pass to the southward of Nicobar, whose southernmost end is in $6^{\circ} 50'$ north latitude, and 28 leagues NWbW. from Pulo Rondo. This island of Nicobar has several good ports on the west side, and in St. George's Channel. The land is high, and may be seen 10 or 12 leagues at sea; it is inhabited, as also are those round it. In good weather, the natives come on board you, to traffic for fowls and other refreshments.

CXC. *Of the NORTH PART of the BAY of BENGAL.*

From Cape Negrais to the river Arrakan, the coast stretches about N. and NbW. From the broken Islands of Arrakan to Sundiva, and to Sagor Sand, the coast lies WbS. and WSW. but when past Sagor Sand, the coast, to where the pilot sloops lie from October to January, stretches WbN. and WNW.

The distance from Point Palmiras to the mouth or entrance of the River Arrakan, is about 100 leagues; and the whole bottom of the Bay of Bengal, from Sagor to Sundiva Island, is low, swampy ground, covered with bushes, intersected with many creeks, and several unknown entrances, by which the River Ganges discharges itself into the bay. This divides the land of the south part of Bengal into numberless islands, which are for the most part uninhabited, except by wild beasts, and in some places by a few poor people, who come there in the dry season to fish and make salt.

From Sundiva Island southward, to within 10 or 15 leagues of Arrakan River, there some unknown dangerous sands that lie a good distance from the shore; and, though the shore from thence to Cape Negrais is bold, yet there are some rocks in deepish water, that must be avoided.

Old Captain Hamilton tells of one near Cape Negrais, about latitude $16^{\circ} 30'$ N. a league off shore. The journal of the Hector Indiaman asserts, seeing breakers on a reef of rocks two miles without them, when they lay at $\rightarrow 4$ leagues off shore, in about latitude $17^{\circ} 20'$ N. but it is thought they have either mistaken their distance off shore, or taken some riplings for breakers; because no rocks were ever seen by others so far off shore in that latitude.

Within the Island of Cubeb, there is a fair and good passage for any ship to pass:

pass: fresh water is also to be had there, looking well after the natives. Both that island, and the islands off the Mouth of Arrakan River, yield good shelter to ships in bad weather.

The hard sand off Point Palmiras is in some places of a light, and in others of a dark-brown colour, with shells and stones; this sand stretches into 20 or 22 fathoms water. The Braces, Sea-reef, Sagor and other sands eastward of Point Palmiras to Sundiva Isle, are, as to what are yet known of them, dark coloured, blackish sand, and sometimes a shining black; nor do any of them reach into above 12 or 13 fathoms water, all without that being soft ground.

From the sea-reef to the sand off Point Palmiras, the ground is from 20 to 23 fathoms: though soft, it is commonly mixed with dark, blackish sand and broken shells; but in the channel between the Braces, and between all the other sands, eastward to Sundiva Isle, the ground is ouze, except on the edge of the sand; there it will be found dark sand and ouze.

About half way between the Arrakan Islands and Sagor Sand, the main part of the great River Ganges empties itself into the sea, between two banks, in a channel of about 6 or 7 miles broad, which is too deep for our common hand-line to measure. For want of knowing this, many ships have been in great perplexity.

All ships working upon the Arrakan Coast, ought to keep some 4-5s clear, a good look-out, and the lead going. If they are in want of water, or in bad weather, they may go under or within the Islands Cubeb (or Cudeba) or within Bolonga Islands, &c. in the mouth of Arrakan River (there the channel is deep and good) as the wind and their situation require.

Ships near this coast, bound to Bengal between the middle of October and the middle of December (if they want no water, and the weather tolerable) had best keep along shore, at 8 or 9 leagues distance. By this they will keep within 25 fathoms water, till they get as high as the Arrakan Islands, in latitude $19^{\circ} 13' N.$ to $20^{\circ} N.$ then by edging off to NW. or rather NWbW. they will deepen their water, and perhaps (though seldom) lose soundings, and by sailing 20 or 30 leagues, will come again into soundings. Let them keep on to the NW. till they get into 18 or 20 fathoms, and then keep all along WbS. and WSW. this will carry them in much the same depth, till they reach the above-mentioned deep channel of the Ganges, about 2° westward of Arrakan River, in latitude 21° or $21^{\circ} 20' N.$; where, perhaps, the water will suddenly deepen to 30, 40, or 50 fathoms, and no ground.

Then keeping on WbS, about 6 or 7 miles farther, they will again have much the same depth of 18 or 20 fathoms, in which let them keep on a WbS. and WSW. course till they find that course deepens their water. They may

may then rest assured they are past Sagor Sand, and should immediately haul up to the NW. or NWbN. till they get into 13 fathoms. Let them then steer WNW. and WbN. and that will lead them right into the track where the pilot sloops lie in 9 fathoms water, to which depth they will come by a very flow and gradual decrease from 13 fathoms, all soft ground, sometimes mixed with sand, shells and rotten stones, that will easily crumble.

These are the best tracks for ships bound to Bengal at this season, supposing the winds favourable; but, as that is not often the case, ships bound this way ought not, at this season of the year, to keep too near the Arrakan Coast; because with NW. winds they will be obliged to \rightarrow , if in shore; whereas, with 8 or 10 leagues offing, they can make a good stretch to the NNE. This however, is wrong in October, or late in December, because in October there are often southerly winds in the Bay of Bengal. Besides, if the coast is once seen, it can always be reached again, because there is no current setting from it; and late in December, the current is quite done all over the north part of the bay; so that, if the ship should sail to leeward of Point Palmiras, she can easily work round to Balasore, provided she keeps close to the shore, and makes use of the tides.

The courses above mentioned, along the north coast of the Bay of Bengal, are to be understood as true courses. Ships should be careful in observing the set of the currents, so as to shape a true course. For instance, suppose it is wanted to steer along shore WbS. if the current runs strong to the SW. or SWbW. it will be required to steer W. or WbN. by the compass, to make a WbS course good. The depth of water will adjust this sometimes; but it is best done by \rightarrow ing; or, if that is inconvenient, the true set of the currents can be nearly ascertained, by observing how the lead-line grows from the ship, after veering out a good deal of line.

The deep channel above-mentioned is not met with by every ship; some passing swiftly over it, and neglecting the lead; others get not into soundings till they are to the westward of it. Ships running in shore, between the False Point and Point Palmiras, have soft ground till they come into 8 fathoms water; there the ground is hard and dark sand, like that of the Braces and the eastern sands.

*Of the West Coast of Sumatra, by Captain Manley.*CXCI. *Of BENCOOLEN, SILLABAR, BUFFALO and MANNA POINTS.*

The River and old Fort of Bencoolen lie in a deep bay, none living there now but Malays. The new fort or Fort Marlborough stands on an hill, over Ozang-Corang, which, in the Malay language, is a point of rocks, and is now called Marlborough Point.

Coming from the northward or southward in Bencoolen Road, you will see Pulo Tecoose, or Rat Island, at least 5 or 6 leagues, if clear weather. It has been observed, coming from the northward, that Rat Island is not seen even from the mast-head, until the Sugar-Loaf bears due East.

When you \rightarrow in the Road of Bencoolen, the nearer the island the deeper the water, and foul ground: but the best \rightarrow ing is the mid-way between the island and south breakers, in about 10 or 12 fathoms, ouzy ground. Rat Island SW. the Sugar-Loaf NE. Pulo Point SSE. Fort Marlborough ENE $\frac{1}{2}$ E. and the Black Rock SE.

The marks for going into the Corang through the north channel (which you ought always to do with the wind northwardly) are as follows. Bring the Sugar-Loaf and Rat Island NE. and SW. then steer right in for the Sugar-Loaf, and you will go mid-channel between the north and south breakers. If a small vessel or any thing larger than a long-boat, keep the lead going, and do not come into less than 4 fathoms. As you round the south breakers, give them a good birth: if they do not break, you will always see a swell on them. When you have the fort, or flag-staff, well open to the north-eastward of the large cocoa-nut grove that is by the water-side, you may steer right in for the Corang, on the Red Cliff, keeping the fort, or flag-staff, on the larboard bow, or as you see necessary, according as you have the wind. You will always see the channel going in there; but be sure, as you go in, to allow the rocks that are off the point on the starboard-bow a good birth; then you may steer for the Jetty-head.

When you have the wind southwardly, always go through the south channel with your boats: this channel is between the south breakers and the point of rocks on the starboard side going in. You must keep well near these rocks, lest the current and swell heave you on the south breakers. Observe in going on shore from the ship, through the south channel, to keep the fort, or flag-staff, open to the southward of the large cocoa-nut grove that is by the

water-side, till you come pretty near the shore-breakers, or breakers on the south point. When you have the channel well open, as you will see by the swell over the south breakers, then keep right in with the Sugar-Loaf, till you open the fort, or flag-staff, well to the NE. of the cocoa-nut grove (as before directed for the north channel). When you are under the Red Cliff, keep along shore for the Jetty-head. The rocks above-mentioned make a convenient place for boats, where no wind nor sea can hurt them. When it blows any thing fresh, boats lie along-side the ships with great difficulty, and sometimes they cannot at all. At Mocha-mocha, Bental, and Triamong, it is much the same; but at Ippoe (without any thing extraordinary to raise the swell) ships have been known to roll their guns in the water; for which reason, much care ought to be taken of the services of the cables, they frequently wanting to be mended.

Sillabar lies about 4 leagues SE. of Fort Malborough, in the bottom of a bay. There lies, about mid-way between both places, a large range of rocks, called Black-Rock, which breaks very high, and may be easily seen and avoided: there is generally a rolling swell on the shore.

Sillabar River and Residency lies in the bottom of a bay, the paggar standing on the starboard side of the river, about a mile up. From thence to Pulo Point it is about 2 or three miles further: this is a good place for ships to lie at in the NW. monsoon, lying always smooth, and sheltered from any wind, if within the rocks.

Three leagues WNW. from Pulo Point, lies a large ledge of rocks, on which there are not above 14 feet water: they do not at all times shew themselves, but are very dangerous, and sometimes break very high. Pulo Point, at Sillabar, is a very low point, with one tall tree surmounting the rest upon it; this point extends itself to the WNW. toward the sea, with a reef of rocks breaking a considerable way from it.

Three or four leagues to the south eastward of this point, is a round bluff point, called Buffalo Point (which may be seen in Bencoolen Road): there is good anchoring for shipping off it, as to the ground and depth of water; but open to the sea, from 7 fathoms to what depth you please, soft ground. There is a Doosam or village inhabited, but a very bad bar, which makes it not used by boats.

From Buffalo Point to Manna Point are 10 or 11 leagues. It has been a very erroneous opinion, that there are no soundings to the southward of Buffalo Point; for we found good regular soundings from Manna to Buffalo Point,
from

from 12 to 30, 40, 50, 60, and 70 fathoms, sandy ground, and where you may \rightarrow if occasion requires; but when Past Manna Point, to the SE. between that and Pulo Pislang, could get no ground till near Fortune Island; and there you lose soundings. There is generally a great swell on the shore along the coast.

Fortune Island, according to captain Norton Hutchinson, lies near E. and W. about 7 miles distance from Flat Point, which makes a sort of a hook, forming a little bay: here a ship may ride with safety. Captain Hall makes Fortune Island to lie in $5^{\circ} 58'S.$ but captain Hutchinson, in taking his departure from Flat Point, allows it in $5^{\circ} 52'S.$

Of the Coast in Sailing from Bencoolen towards Mocha-Mocha.

CXCH. Of SINGLE DEMOON POINT, CATOWN, and SIBBLAT, IPPOE, BANTALL, FREDRICKETT, and MOCHA-MOCHA.

In sailing along shore to the northward, be sure you give Single Demoon Point a good birth, by reason of the foul ground and rocks that lie a considerable way off it. Your best way is to keep the shore on board, that you may not be deceived by the high land, which oftentimes shews itself in many different shapes, according to the weather. A little to the northward of Single Demoon Point you will see Red Cliffs: you may run into what depths you please, as 9, 10, and 11 fathoms, and out to 20 fathoms. You will meet with good ouzy ground for \rightarrow ing all the way, if occasion requires, till you come near Ippoe (as hereafter mentioned) then you will lose sight of the Red Cliffs.

From Bencoolen to Catown is about 10 or 11 leagues NWbN. it appears with an opening between the Red Cliffs like a river. From thence NW. about 4 or 5 leagues further lies Sibblat, which appears also with an opening between the Red Cliffs and Catown.

From Sibblat to Ippoe, the course is NW. 4 or 5 leagues. To the SW. of Ippoe, there runs out a bank of foul ground from the shore, extending near 2 leagues into the sea. You will find upon it, from 6 to 10 fathoms, large coral. On the outermost edge of it there lies a coral rock, SWbS. 2 leagues from Ippoe, with no more than 14 feet water on it, and from 8 to 16 fathoms round it. On this rock the Swallow struck. Come no nearer than 10 fathoms, it being very steep, and but a little way off it 30, 40, and 50 fathoms, and then presently no ground.

B b 2

When

When you bring Ippoe NEbE. you are to the northward of the bank, and may safely stand into Ippoe Road, where you will see, a little to the southward, three red cliffs, like the country boat-fails, called Tombongoes, and three green hills, if clear weather, without these. The middlemost of these is that on which the old paggar stood, bearing NEbE. the extremities of land, from NNW. to SEbE. Large ships should come no nearer to \rightarrow than 9 or 10 fathoms, the road being clear; but within is shoal water and foul ground.

Between Ippoe and Bantall are 4 rivers, Aijer, Ruttah, Etam and Triamong. Bantall lies about 7 leagues to the northward of Ippoe, in a deep bay. You may stand in to what depth you please, after you are past Ippoe; but keep off shore in sounding from 15 to 7 fathoms, you will find good ground, and even soundings. In crossing the bay from Bantall you will see a small red cliff, which is the north point of Triamong River, pretty low, near the water's edge: this is the only red cliff discernable between Ippoe and Mocha-mocha. When you see it, you may be certain where you are; and then look out for Bantall River's mouth, which you may see as you advance to the northward, if you keep in 6, 7, or 8 fathoms, as you may safely do.

A little to the southward of some straggling pine-trees, you will see the houses and river's mouth a little to the northward thereof: you will see two white cliffs, which in the offing appear much like boat-fails. These marks (in clear weather) you may see a considerable way: and by them you may depend on knowing the places, in case you can see no other. It is a very good road to \rightarrow in; when you have the river's mouth NE. and the two above-mentioned cliffs NNE. you are then in the best of the road, and may \rightarrow in good sand and ouzy ground, from 8 to 6 fathoms.

About 4 leagues NW. from Bantall is Fredrickett; its river has a large bar, which renders it unnavigable, even for boats. When you are near it, you will see the river's mouth open: you may easily discover it by a parcel of tall trees that stand thicker on each side of the river's mouth than any where else.

About 3 leagues NW. of Fredrickett lies Mocha-mocha: all the way between them is white sand, and generally a great swell, heaving in upon the shore. A little to the northward of Fredrickett you will see a bluff point, full of trees, called Buffalo Point, which you may be sure (if bound to Mocha-mocha) to keep well on board, by rounding it in 6 or 7 fathoms: this you may do without danger; otherwise you may miss the port. After you are about it,

you

you will see a tall spiral tree, which stands a little to the northward of the river's mouth, appearing at first sight like a flag-staff, to the southward of which, as you open the bay, you next see a long house, which makes like a row of buildings, being the Datta-Bugase's house. Next look out for the flag-staff and pagger, which you will not see till you are shot well to the northward.

You may at pleasure \rightarrow in Mocha-mocha Road, from 6, 7, to 10, 11, or 12 fathoms, soft ground; the flag-staff bearing from NEbE. to SEbE. according to the monsoons, for conveniency of boats coming on board, or going on shore.

As you sail along shore, Mocha-mocha appears in the bottom of a small bay, and clear of trees, when you have the bay well open. If you are to the northward, you may see the houses and factory in the middle of the clear.

On each side of the bay stands a row of tall pines, which make both extremes appear bluff; but in the morning (if not very clear) you can hardly see houses or factory, till the sun is 3 or 4 hours high above the land, by reason of the shade the land and trees make, which are at the back of it.

WNW. about 3 leagues from the flag-staff there is foul ground, as rock and sand: by this (when coming from the northward) you may know you are near Mocha-mocha, in case you have not an opportunity of seeing the land, or flag-staff. Soundings upon it are from 35 to 18 and 11 fathoms, and doubtless less water, for it breaks very high.

Never depend on your distance: run any where along this coast, as there are very strong currents, frequently running above 2 knots an hour, and very uncertain, being chiefly influenced by the shifting of the winds; for a twelve-hours gale along shore will occasion a current.

If a ship should be in want of water whilst she is to the northward, the natives will bring it off to you. Their usual price has been 8 dollars for only 6 puncheons: your own boat cannot supply you, by reason of the great surfs and shoal water there is on the bars.

Of Islands in the Indian Ocean.

CXCIII. *Of the COMERO ISLANDS.*

The Comero Islands take their name from the largest of them, which is called the Grand Comero. These Islands are very high and mountainous, and the latitudes and longitudes of them are as follows:

Comero's

Comero's latitude $011^{\circ} 40' S.$ Longitude $42^{\circ} 52' E.$ from London.
 Joanna's latitude $12^{\circ} 11' S.$ Longitude $44^{\circ} 5' E.$
 Mayotta's latitude $13^{\circ} 10' S.$ Longitude $44^{\circ} 30' E.$
 Mohilla's latitude $12^{\circ} 20' S.$ Longitude $43^{\circ} 56' E.$

Comero bears from Joanna WNW. distance 26 leagues; but from land to land are only 22 leagues. Mayotta bears from Joanna ESE; S. distance 23 leagues; but from land to land are not more than 10 or 11 leagues: this island hath an high and remarkable peak on the south part of it. Mohilla bears from Comero SE; S. distance 17 leagues; but from land to land not more than 8 or 9 leagues. The variation amongst these islands was $18^{\circ} 42' W.$ in 1762. The present variation is $19^{\circ} W.$ These Islands being very high, are seen a great way at sea, in clear weather.

Amongst these islands, in the SW. monsoon, you generally meet with little winds, variable and calm; and you will generally find a strong current setting to the south-westward. A spirt of wind will drive a ship from Joanna to the NE. part of Comero, where she may be becalmed, and drove with the current to the SW. of Comero. Many ships have been driven so by the current in calm weather.

People who have been ashore there, while lying becalmed off Comero, have reported, that they were very civilly received by the inhabitants, who gave them plenty of fruit, and such as the island afforded; and seemed much inclined to encourage strangers to come amongst them. This island abounds with fresh provisions, and refreshments, in as great plenty as at Joanna; and the inhabitants are as civil: the reason why it is not frequented is, that there is no good road, or bay, that we know of, where ships can lie safely at \rightarrow .

When ships have completed their water, &c. at Joanna, they sail to the northward for India, and take their departure from the Island Comero, being the last island they see. As they run to the northward, they will find fresh and steady gales at SSW. and SW. and the more they run to the northward, the more westerly they will find the winds, and the fresher they blow.

It is customary for ships, when they take their departure from Comero, to make their course north-westerly, so as to make $1^{\circ} W.$ longitude from Comero, when they are in latitude $8^{\circ} S.$ to avoid the shoals laid down in the draughts, &c. to the eastward. You have, in this latitude, variation $18^{\circ} 20' W.$ and in this run you will find a southerly current.

CXCIV. *Of the BASSAS DE PALRAM, and BASSAS DE AMBER.*

From latitude 8° S. and longitude, made 1° W. from Comero, you may make your course north, something easterly, so as to run down your west longitude made; but not to make any east longitude from Comero, when in latitude $4^{\circ} 25'$ S. in this latitude lies the Bassas de Palram, near the meridian of Joanna; or in longitude $44^{\circ} 7'$ E. from London; and $1^{\circ} 15'$ E. from Comero.

Being in the meridian of Comero, and having crossed the latitude of Bassas de Palram, and got into latitude $4^{\circ} 10'$ S. and variation 16° W. you may make your course NE. or NEbE. so as to make 5° E. longitude from Comero, and variation 12° W. when you cross the line.

You should not make more longitude from Comero to the line, than 5° or $5^{\circ} 20'$ E. at most; for there lies upon the line a dangerous shoal, called the Bassas de Amber. Several navigators assure that they have seen this shoal, and that part of it is dry. All accounts agree that it lies upon the line. Its longitude is $51^{\circ} 38'$ E. from London, or $8^{\circ} 46'$ E. from Great Comero.

If you cross the line, and have made 5° or $5^{\circ} 20'$ E. longitude from Comero, you will go $3^{\circ} 46'$ or $3^{\circ} 26'$ to the westward of it. With that longitude you will cross the line with 12° W. variation. Here you will find a southerly current, of from 10 to 15 miles in the 24 hours.

Continue your Course NE. or NEbE. till you are in latitude $3^{\circ} 30'$ N. and you have longitude, made from Comero $9^{\circ} 30'$ E. and variation $8^{\circ} 28'$ W. You are then clear of all danger, and may steer as you please.

CXCV. *DIRECTIONS for SHIPS bound to BOMBAY.*

When ships have got thus far in the above latitude, longitude, and variation, and are bound to Bombay, they will of course haul to the northward, in order to get into the latitude of their port, and then run down upon it with an east course. As they run to the north-eastward, they will decrease their variation very fast.

If they come on the coast in July or August, they will meet with strong gales and squalls, with abundance of rain, and thick hazy weather; and the wind constantly south-westerly, being the height of the SW. monsoon.

Let a ship keep the parallel of $18^{\circ} 50'$ N. till she has soundings (which she will have 28 or 30 leagues off the coast, at 80 or 90 fathoms, which shoalens very gradually, as you run in for the coast) in the above latitude, in soundings, you will have the variation $1^{\circ} 30'$ W. You will, at this time of the year, generally

generally find a current setting to the southward, along the coast, from 15 to 20 and 24 miles, in the 24 hours: which you must make an allowance for in your course steered, and may run in for the land by your soundings. If the weather is clear, you will see the land about Bombay, in 40 fathoms water; and then you will be distant from the land 10 or 11 leagues. The land near Bombay (being very high) may be seen a great way in clear weather. From 55 fathoms, brown sand, you will run 22 or 20 leagues before you shoalen the water to 36 fathoms, muddy ground. In 36 fathoms you will be 8 or 9 leagues off; in 26 fathoms you will be 6 or 7 leagues off; in 17 or 18 fathoms you will be 4 or 5 leagues off the land, in latitude $18^{\circ} 50' N$.

CXCVI. *CAUTIONS to be observed in SAILING toward BOMBAY.*

If you keep in latitude $18^{\circ} 50' N$. you will run in exactly mid-way between Old Woman's Island and the Island Kanary; and you will shoalen your water gradually from 17 or 18 fathoms, 4 leagues off shore, to 9 or 10 fathoms, 5 or 6 miles off shore; but if you are to the northward, in latitude $18^{\circ} 57'$ or $19^{\circ} N$. on the back of Old Woman's Island, at high-water time, you will have 10, 11 and 12 fathoms, within 2 or 3 miles of Old Woman's Island. Another disadvantage, will attend your being to the northward in the last-mentioned latitude, namely, the winds are at SW. and often SSW. you will not be able to fetch round the reef, in order to go into the harbour; but will be obliged to tack and stand off to sea again, by which you may lose time, and an opportunity of getting into the harbour.

If you are to the southward of latitude $18^{\circ} 45' N$. you will cross a bank, with 24 and 26 fathoms water on it, and 32 and 34 fathoms between that bank and the shore; by which you may know you are not more than 7 or 8 leagues from the coast.

Of the Seasons, Winds, and Weather, &c. near St. Augustine's Bay, or between Madagascar and the Continent, in all the Months of the Year.

CXCVII. *Of the WINDS and WEATHER in the SOUTH-WEST and NORTH-EAST MONSOONS.*

All the west side of Madagascar, between it and the Continent, from Cape Corientes to Mosambique, is what may very properly be called a gulf, on
account

account of the variableness of the winds, the uncertainty of the weather, and the sudden storms that frequently happen there at all times of the year, but most so in the NE. monsoon.

In the SW. monsoon, or the fair-weather season, which is from April to the beginning or middle of November, the weather is mostly moderate and fair, the winds chiefly from SW. to SE. In shore you have sea and land breezes; but the winds in the offing are often variable, and frequently northerly. If you have a storm in those months, it is either at NW. or SE. Ships ride out smart gales of wind at NW. and NNW. in St Augustine's Bay, in August: this throws a great sea into the Bay, and the sea breaks very high on the shoals without. It very frequently blows hard at SE. and ESE. though this is the fair-weather season. During all this season, you generally find a southerly current all along the Coast of Madagascar; though sometimes it sets to the northward, but very seldom.

In the beginning of November, the NE. monsoon sets in at the Island Joanna, and the islands adjacent, and the north part of Madagascar. The said monsoon sets in at St. Augustine's Bay, about the middle or toward the latter end of November; after which time it is dangerous lying in St. Augustine's Bay: for, though it is called the NE. monsoon, the wind is often at N. and NW. blows right into the bay, and throws in so great a sea, that it is dangerous for ships to lie there.

This NE. monsoon seldom reaches much beyond St. Augustine's Bay, unless by chance, now and then, when the winds are variable, and it is inclined to be stormy weather; for the SE. winds mostly prevail about the south end of Madagascar at all times of the year. At this time of the year, that is, the latter end of November, December, January, and February, these SE. winds blow very strong; and the wind is often S. and SW. with squalls and rain.

These SE. and southerly winds, forcing themselves to the northward, and meeting the strong NE. N. or NW. winds, repel each other with great fury: this occasions terrible storms and tempests, the winds flying about like a whirlwind, the sky dark and cloudy, with a deluge of rain, and a most confused sea.

In the NE. monsoon, the northerly winds generally prevail as far as to the southward or southern tropic, and sometimes not so far, but only to latitude 21° or 22° S. where they are met by the SE. or southerly winds, which generally carry it against the northerly winds, especially to the southward of the southern tropic.

This bad-weather season continues from November to the middle or latter end of March, and makes those seas between Madagascar and the Continent, like a gulf; and therefore it may be called the Gulf of Madagascar, on account of the sudden storms and changeableness of the winds and weather.

During the NE. monsoon the current generally runs strong to the southward and south-westward, near the Continent, so as to set a ship 20 or 25 miles in 24 hours. At the same time it runs as strong to the northward, near the Coast of Madagascar. At this time of the year you will find your ship much to the westward of the reckoning, occasioned by the current, which sets strong to the southward and south-westward.

In this Gulf of Madagascar, the NE. monsoon seldom blows farther than the southern tropick; there it is met by the SE. S. or SW. winds, which repel it; but the SW. monsoon blows quite through between Madagascar and the Continent, into the Indian Seas; then it turns more westerly, the further you go to the northward.

In the SW. monsoon, between Madagascar and the Continent, there are frequent revolutions of the winds: it is sometimes variable, and frequently northerly as before-mentioned; but the winds in general are mostly southerly, or from SE. to S. and SW.

When ships sail from Madagascar, or St Augustine's Bay, they sometimes take their departure from a place called Westminster-Hall, which is an hill a long way in the country, and therefore a very improper place to take your departure from, as neither the latitude nor longitude of it is ascertained. I think Sanday Island, on the south side of St. Augustine's Bay, a more proper place, as it lies parallel with the coast. Its latitude is $23^{\circ} 42'S.$ and longitude $43^{\circ} 50'E.$ from London

CXCVIII. *Of SANDY ISLAND.*

When ships sail from St. Augustine's Bay, for India, they generally run to the westward, and make $50'$ or $52'$ W. longitude from Sandy Island, and then make their course due north. They do this to keep clear of the W. Coast of Madagascar, which is all foul ground, with several shoals lying some distance off the coast, all the way to the northward from St. Augustine's Bay to Cape St. Andrea, in latitude $15^{\circ} 58'S.$ and to shun a rock which is laid down in the India Pilot, and other draughts, in latitude $21^{\circ} 27'S.$

When you have made $52'$ or $50'$ W. longitude from Sandy Island, a north course carries you clear along the coast, to the eastward of the above-mentioned rock, and clear of all danger.

In

In latitude 22° S. and longitude made from Sandy Island, 1° W. the variation has been observed $23^{\circ} 42'$ W. and no soundings: nor will you have any till you come into latitude $17^{\circ} 32'$ S. In sailing along this part of the coast of Madagascar, you will generally find a southerly current, setting from 10 to 15 and 20 miles to the southward in 24 hours; though it sometimes sets as much to the northward.

Before you come into latitude 18° S. or thereabout, take care to keep more to the eastward, so as to reduce your longitude, made from Sandy Island, to $30'$ W. or thereabout, in order to keep to the eastward of St. Christopher's.

CXCIX. Of St. CHRISTOPHER'S ISLE.

By journals, the latitude of St. Christopher's is $17^{\circ} 27'$ S. and longitude 22° E. of the Sandy Island, near St. Augustine's Bay. St. Christopher's is a small, low, bare island, with few breakers about it. The variation off this island, was $21^{\circ} 44'$ W. 1756. and 21° W. 1776.

In latitude $17^{\circ} 32'$ S. longitude made from Sandy Island, $50'$ W. the variation is 22° W. soundings at 26 and 27 fathoms water, then 30 fathoms, coarse brown sand; continued soundings from latitude $17^{\circ} 32'$ to $17^{\circ} 14'$ S. but very irregular, as from 25 to 30, 18, 14, 25, 16, 20, 27, 25 fathoms: and then no soundings at 60 fathoms.

In latitude $16^{\circ} 40'$ S. and longitude made from Sandy Island, $25'$ W. the variation $21^{\circ} 32'$ W. hereabout, you ought to keep to the eastward, and to make your course NbE. to avoid a dangerous shoal, seen by three Indiamen, (the Chesterfield, Walpole, and Hector) in August, 1756. An account thereof, taken out of the Chesterfield's log-book, is as follows.

At 5 A. M. saw breakers from the mast-head, right a-head of us; hauled our wind, in order to go the Westward of them, though I perceived the passage good to the eastward. The Walpole and Hector did the same, and I believe were nearer to them than we, though we were not half a cable's length from the White Heads. This shoal appears to be a mile long, and half a mile broad, and lies near E. and W. There is on it one small rock, that is dry, and a little to the eastward of that rock, a patch of reddish sand, that is dry also; against which the sea broke furiously, though moderate weather. There was a confused sea where the ship went through.

They had 30 fathoms water when they first saw the shoal, and were steering NE. The breakers were then right a-head of them: then they had 19, 20, 12, $10\frac{1}{2}$, 7, and 6 fathoms. They past them in 6 fathoms, within half a cable's

length of the breakers; then $7\frac{1}{2}$, 12, and 25 fathoms. 2 or 3 leagues to the westward of the shoal; then no soundings at 40 fathoms.

At noon they were in latitude, by observation, $15^{\circ} 59'S$. and longitude, made from Westminster-Hall, $58^{\circ}W$. they experienced a northerly current, which set the ship 12 miles to the northward of the reckoning.

The course and distance from 5 A. M. to noon, with an allowance for the north current, is $W 36^{\circ}N$. distance 24 miles from the breakers on the shoal; by which the shoal is in latitude $16^{\circ} 13'S$. and longitude, from Westminster-Hall, $38^{\circ}W$.

They saw the island St. Christopher, at 6 P. M. the evening before, bearing east, distance 2 or 3 leagues. Their course and distance from St. Christopher's, with the bearings of it, at 6 P. M. and allowance for the northerly current, make the shoal they saw, called the Chesterfield Shoal, to lie from St. Christopher's $N. 5^{\circ}E$. distance 72 miles, or 24 leagues. This shoal is not laid down in any former map, book, or chart; it should be carefully avoided.

Your longitude, made from Sandy Island, when in latitude $16^{\circ} 20'S$. should not be more than $12^{\circ}W$. the variation $21^{\circ} 10'W$.

From this latitude you may make your longitude, easterly; so that in latitude $13^{\circ} 12'S$. you may have made $50^{\circ}E$ longitude from Sandy Island. Variation $20^{\circ} 10'W$. in which latitude, longitude, and variation, if the weather is clear, you will see the Island Mayetto, bearing about east of you, distance 8 or 9 leagues. This island is high land, and has a high remarkable peak on the south side of it, which you may see at the above-mentioned distance.

Hereabout you will find a strong southerly current, which will set the ship from 20 to 24 miles to the southward in 24 hours. Make your course NNE . 4 or 5 leagues, and you will see the island Joanna bearing about NNE . or $NNE\frac{1}{2}E$. distance 11 or 12 leagues, it being very high land, much higher than either Mayotta or Mohilla, with a very high peak in the middle; and then Mayotta will bear EbS . You have no soundings hereabout. Steer for the west part of Joanna, and you will soon see the Island Mohilla, which is also an high island: you will see it to the NW . of you.

Ships always go between Joanna and Mohilla; and go within 2 or 3 miles of the west part of Joanna, and so to the eastward of Angazecha, or the Great Comero, there being a small island to the northward of this, in latitude $10^{\circ} 30'S$. called the little Comero. If bound into Joanna, observe the following.

CC. Of JOANNA ROAD.

There is a reef lies off the SW. and W. parts of this island, at some distance from the shore, which you will see as you come near it. This reef runs to the west point of the island, and joins to a small island with a saddle in the middle of it, commonly called Saddle Island, which lies a small distance off the west point of Joanna. You may steer for this island, and round it, at about half a mile's distance, in 10 fathoms water. The water there appears as if a shoal; but you have no reason to be afraid; keep in 10 or 11 fathoms water, no danger.

As soon as you are a-breast of the Saddle Island, you will open the Bay and Road of Joanna; then haul up to the eastward, and keep the western shore aboard, if you can. You will find the winds variable and squally, and drawn by the valleys: be cautious in carrying much sail; for the squalls, out of the bay, are sudden and heavy. You may round the bay by keeping in 25 fathoms water, about a mile from the shore, till you bring the church SE:E. and then you may →.

You will be very lucky, if you are not obliged to make several tacks before you get into →ing ground. When the church bears SE:E. and the west point of the bay WbN, and the east point NE:N. then you are right abreast of the watering-place; and you may → with these bearings in 25 or 20 fathoms water. You may carry out your kedge or stream →, and haul in shore, so as to raft your cask off with the studding-sail, halliers, &c.

There is another watering-place, that comes through the first Toddy Tope, to the eastward of the town; for which bring the church SEbS.

Here you get plenty of good water; but wood is rather a scarce article. Here are also plenty of fresh provisions and other refreshments, such as beef, goats, fowls, lemons, oranges, cocoa-nuts, &c. at a cheap rate. The inhabitants are Mahometans, and are a civil, courteous people, and ready to help strangers. The island is pleasant and healthy, though very high and mountainous.

The NE. monsoon comes on, or sets in at Joanna, and the islands adjacent, about the 10th or 16th of November: then it is dangerous for a ship to lie in Joanna Road.

CCI. *Captain Thomas Neale's Account of his Passage in the Swift Grab, from Bencoolen toward the Basses de Chagos, and the Seychelle Islands, is as follows:*

I sailed from Bencoolen the 7th of May, 1772, and continued my course to the westward. In order to proceed with greater certainty, I endeavoured to
make

make either the Island Ady or Candy, but missed them, though I had always shortened sail in the night, and kept frequently sounding. When I had made $26^{\circ} 45' W.$ meridian distance from Trieste (a foul island off Bencoolen) the ship's place on the chart was about 30 leagues to the westward of Ady. and Candy.

On the 31st of May, at 3 A. M. I got soundings at 50 fathoms, muddy bottom; and from the care I had always taken, I was ready to believe that my soundings were upon one of these islands. I immediately lay-to with the vessel's head to the southward, intending to wait till day-light; and then to go in and take some turtle, which it is said may be got at these islands. In lying to, we shoaled very gradually, till half past 4 o'clock, to 45 fathoms, mud; then had 43 fathoms, white sand; and the next cast, 25 fathoms, coral rocks, and some casts 25 fathoms, sand and shells. I then wore, and stood to the eastward under the topsails; had 24, 18, 17, and $\frac{1}{2}$ less 11; then 14 fathoms, white sand and shells; then deepened to 24 fathoms, and the next cast had no ground at 100 fathoms. At day-light I expected to have seen the land, but did not; by which I knew I was upon the east side of the Basses de Chagos. After we were out of soundings I steered north, in order to get into a lower latitude, and then proceed again to the westward. At 9, saw rocks again under our bottom; sounded 15 fathoms, upon which (and seeing the water in many places discoloured and green, a sure sign of rocks) I hauled off NE. and had no more soundings. At noon I observed in $5^{\circ} 50'$ south latitude, and steered NEbN.

At 4 P. M. June 1, saw two ranges of islands: the body of one bore SWbW. and the body of the other ENE. I immediately steered for those in the ENE. which were distant near 5 leagues, and by 10 o'clock was within a mile of one of them, and being favoured with the light of the moon, stood very near to them, but could get no ground at 100 fathoms. Upon which I continued making short tacks till the morning, when I sent the boat on shore, which soon after returned laden with cocoa-nuts and boobies; but, as the landing here was very difficult, on account of the great surf, I made sail to the eastward in search of a better landing-place; and about 9, discovered a very fine basin. I sent the boat to found it, in order to go in there; but they found it a rocky bottom: however, the water was very smooth, so that a vessel having a chain might ride there. The boat landed there upon a fine sandy beach, without any danger. I gave them fire-arms to shoot with, but they had no occasion to use them: the birds were so tame, they might be taken off the trees. We found no water here. It is said, that wherever the cocoa-nut grows, water may be got by digging; but we did not want any. The cocoa-nut grows upon almost all this range of islands. There are ten of them in number: they are joined to each other by a reef
of

of rocks, over which the surf breaks with great violence, and are each about the size of Kanary, off Bombay. The variation here I observed $3^{\circ} 7'$ W. the latitude $5^{\circ} 23'$ S and it is high water on the full, at 12 o'clock. It bears from the first soundings about N. 62° E. 20 leagues.

The other range of islands seen to the SWbW. are innumerable; as they were to leeward, I did not think it prudent to entangle myself with them: they may be seen, I believe, 8 or 9 leagues in very fine weather. I suppose the haziness of the morning prevented my seeing them sooner.

In respect to the situation and extent of the Basses de Chagos, I was on them once before in a ship, called the Greyhound, Capt. David Simmons, in the year 1768, going the southward passage from Madras to Bombay, in the month of September. We had made 7° W. meridian distance from Madras; and our latitude by account $4^{\circ} 46'$ S. when we saw the rocks under her bottom, and had soundings at 7, 8, and then 52 fathoms, rocks, and then no more soundings. Therefore their extent from N. to S. is from latitude $4^{\circ} 46'$ S. to $6^{\circ} 23'$ S. if not more, as I have been upon them in both those latitudes; and if 7° are measured west from the Meridian of Madras, and $26^{\circ} 45'$ W. from Trieste, both these will shew the true place of the Basses de Chagos. I have heard that the Winchelsea Indiaman, Captain Howe, was also upon them: if so, his reckoning will be of service, in some measure, to compare with this.

In order to give you as much intelligence as possible as to the reasons of my examining that track, you may observe that I was sent from Bombay, and sailed the 10th of March, 1772, to discover and explore certain islands called the Three Brothers, whose situation is uncertain, but laid down in the charts in longitude $62^{\circ} 30'$ E. and latitude $3^{\circ} 50'$ S. also the the Seven Brothers laid down in longitude $60^{\circ} 15'$ E. and latitude $3^{\circ} 30'$ S. (which islands have also been sought for by a ship belonging to the India Company for two years successively, with the same success); but meeting with some accidents at sea, after much perseverance I was obliged to bear away for Bencoolen, distance near 20° , having on board but one keg of water, and arrived there May 2, 1772. Sailed again on the 7th, and proceeded to the westward in the SE. trade.

After I left Praslin, I proceeded back to the eastward, and examined very well all the track to the eastward of Praslin for dangers that are said to exist thereabout, and ran $6^{\circ} 43'$ E. in the parallel between 4° and 3° of latitude, and afterwards back westerly to Praslin again, and had no soundings nor sight of any other lands in all the three times I ran in that track.

The island named Seychelles is inhabited by the French, and has a good harbour, &c.

To

To this account of the Seychelle Islands, by Captain Neale, it seems not improper to add, that the largest of these islands is called Mahé or Seychelle Isle; the next is Praslin Isle; the next Curieuse, Digu, Silhouette, Felicity, Mariane, Frigate Isle; and about 12 others of lesser magnitude, whose latitudes and longitudes are expressed in the chart which describes them.

CCH. *An ABSTRACT of the SWIFT GRAB'S JOURNAL, from BENCOOLEN toward the SEYCHELLE ISLANDS.*

Wednesday, 13th May, 1772.

At $\frac{1}{2}$ past 2 PM. Trieste in sight from the deck, bearing EbS $\frac{1}{2}$ S. distant about 6 leagues, from which I take my departure.

Course made good, S71°W.

Distance made good, 94 miles

Latitude by an indifferent observation, 4° 39'S.

Merid. dist. from Trieste, 1° 29'W.

Thursday, 14th May, 1772.

Course made good, WbS.

Distance made good, 94 miles.

Latitude observed, 5° 0'S.

Latitude by account, 4° 57'S.

Merid. dist. from Trieste, 3° 1'W.

Friday, 15th May, 1772.

Course made good, S71°W.

Distance made good, 62 miles.

Latitude by observation, 5° 40'S.

Latitude by account, 5° 20'S.

Merid. dist. from Trieste, 40° 0'W.

Saturday, 16th May, 1772.

Course made good, west.

Distance made good, 47 miles.

Latitude by observation, 5° 40'S.

Latitude by account, 5° 41'S.

Merid. dist. from Trieste, 4° 47'W.

Sunday, 17th May, 1772.

Course made good, S21°W.

Distance made good, 21 miles.

Latitude by observation, 6° 6'S.

Latitude by account, 5° 59'S.

Merid. dist. from Trieste, 4° 54'W.

Monday, 18th May, 1772.

Course made good, S14°W.

Distance made good, 27 miles.

Latitude by account, 6° 32'S.

Merid. dist. from Trieste, 5° 1'W.

Tuesday, 19th May, 1772.

Little wind and fair weather.

Course made good, west.

Distance made good, 19 miles.

Latitude by observation, 6° 36'S.

Latitude by account, 6° 33'S.

Merid. dist. from Trieste, 5° 20'W.

Wednesday, 20th May, 1772.

Little wind and fair weather.

Course made good, S65°W.

Distance

Distance made good, 20 miles.

Latitude by account, $6^{\circ} 44' S$.

Merid. dist. from Trieste, $5^{\circ} 38' W$.

Thursday, 21st May, 1772.

Moderate and hazy weather.

Course made good, $S 76^{\circ} W$.

Distance made good, 75 miles.

Latitude by account, $7^{\circ} 2' S$.

Merid. dist. from Trieste, $6^{\circ} 51' W$.

Friday, 22d May, 1772.

Course made good, west.

Distance made good, 24 miles.

Latitude by observation, $7^{\circ} 30' S$.

Latitude by account, $7^{\circ} 4' S$.

Merid. dist. from Trieste, $8^{\circ} 55' W$.

To the southward of account these

last 3 days, 28 miles, which I impute

to the steerage.

Saturday, 23d May, 1772.

Moderate and cloudy weather. A

large following swell throughout.

Course made good, west.

Distance made good, 140 miles.

Latitude by observation, $7^{\circ} 40' S$.

Latitude by account, $7^{\circ} 30' S$.

Merid. dist. from Trieste, $11^{\circ} 15' W$.

Sunday, 24th May, 1772.

Moderate and Cloudy weather.

Course made good, WbN.

Distance made good, 140 miles.

Latitude by observation, $7^{\circ} 20' S$.

Latitude by account, $7^{\circ} 17' S$.

Merid. dist. from Trieste, $13^{\circ} 32' W$.

Monday, 25th May, 1772.

Moderate and hazy weather.

Course made good, WbN.

Distance made good, 137 miles.

Latitude by account, $6^{\circ} 40' S$.

Merid. dist. from Trieste, $15^{\circ} 43' W$.

Tuesday, 26th May, 1772.

Fresh breezes, and cloudy weather

throughout.

Course made good, WbN.

Distance made good, 139 miles.

Latitude by observation, $6^{\circ} 27' S$.

Latitude by account, $6^{\circ} 13' S$.

Merid. dist. from Trieste, $17^{\circ} 59' W$.

Wednesday, 27th May, 1772.

Moderate and hazy weather. P. M.

bent the cables. Sounded every hour

in the night, and kept a good look-out

for the Islands Ady and Candy. No

ground at 30 fathoms.

Course made good, WbN.

Distance made good, 110 miles.

Latitude by observation, $6^{\circ} 5' S$.

Latitude by account, $6^{\circ} 5' S$.

Merid. dist. from Trieste, $19^{\circ} 47' W$.

Thursday, 28th May, 1772.

Sounded every hour in the night, and

kept a good look-out.

Course made good, west.

Distance made good, 109 miles.

Latitude by observation, $6^{\circ} 0' S$.

Latitude by account, $6^{\circ} 5' S$.

Merid. dist. from Trieste, $21^{\circ} 36' W$.

Friday,

Monday, 25th May, 1772.

Moderate and hazy weather.

Course made good, WbN.

Distance made good, 137 miles.

Latitude by account, $6^{\circ} 40' S$.

Merid. dist. from Trieste, $15^{\circ} 43' W$.

Tuesday, 26th May, 1772.

Fresh breezes, and cloudy weather

throughout.

Course made good, WbN.

Distance made good, 139 miles.

Latitude by observation, $6^{\circ} 27' S$.

Latitude by account, $6^{\circ} 13' S$.

Merid. dist. from Trieste, $17^{\circ} 59' W$.

Wednesday, 27th May, 1772.

Moderate and hazy weather. P. M.

bent the cables. Sounded every hour

in the night, and kept a good look-out

for the Islands Ady and Candy. No

ground at 30 fathoms.

Course made good, WbN.

Distance made good, 110 miles.

Latitude by observation, $6^{\circ} 5' S$.

Latitude by account, $6^{\circ} 5' S$.

Merid. dist. from Trieste, $19^{\circ} 47' W$.

Thursday, 28th May, 1772.

Sounded every hour in the night, and

kept a good look-out.

Course made good, west.

Distance made good, 109 miles.

Latitude by observation, $6^{\circ} 0' S$.

Latitude by account, $6^{\circ} 5' S$.

Merid. dist. from Trieste, $21^{\circ} 36' W$.

Friday,

Friday 29th May, 1772.

Fair pleasant weather. Sounded every hour in the night, and kept a good look-out. No ground at 30 fathoms.

Course made good, $W 3^{\circ} S$.

Distance made good, 109 miles.

Latitude by observation, $6^{\circ} 10' S$.

Latitude by account, $6^{\circ} 5' S$.

Merid. dist. from Trieste, $23^{\circ} 25' W$.

Saturday, 30th May, 1772.

Moderate breezes and smooth water. Sounded every hour in the night. No ground at 66 fathoms.

Course made good, west.

Distance made good, 115 miles.

Latitude by observation, $6^{\circ} 11' S$.

Latitude by account, $6^{\circ} 2' S$.

Merid. dist. from Trieste, $25^{\circ} 20' W$.

Sunday, 31st May, 1772.

Moderate breezes and hazy weather. A swell from the SE. At sun-set shortened sail, and went under the top-sails all night, keeping a good look-out. At 3 A.M. brought-to main top-sail to the mast. Sounded, and had 50 fathoms, muddy ground. At $\frac{1}{2}$ past 4, had 45 fathoms, then 43 fathoms, white sand. At 5, had 25 fathoms, coral and shells: then wore and stood east a little; the soundings 24, 18, 17, $\frac{1}{2}$ less 11, then 14 fathoms, white sand and shells: then deepened to 24 fathoms, and then no ground at 100 fathoms. At sun-rise

very hazy, and no land in sight; by which I conclude that we are on the east side of the Basses de Chagos, though by Herbert's Directory we are $5^{\circ} 20'$ to the eastward of them. At 9, saw rocks again under the bottom; had 15 fathoms red and white coral; and then no ground.

Latitude by observation, $5^{\circ} 50' S$.

Latitude by account, $5^{\circ} 29' S$.

Monday, 1st June, 1772.

Moderate and fair. At 4 P.M. saw the land from the deck: two clusters of islands; the one bore ENE. and the other SWbW. At sun-set one cluster, which is the smallest, bore EbN: N 4 or 5 leagues; and the other from WbN to WSW. distant 7 or 8 leagues. Kept making short tacks under the lee of the small cluster of islands. Sounded constantly; no ground at 100 fathoms within $\frac{1}{4}$ of a mile of the shore. When up to this cluster of islands, the others are just out of sight. I suppose their distance about 11 leagues. At 5 A.M. hoisted out the boat, and sent her on shore. Variation by a good morning amplitude, $3^{\circ} 7' W$. At 8 \rightarrow ed with the best bower in 22 fathoms, gravel; distance from the shore, about 60 yards. Ditto, the \rightarrow slipped off the bank, and was immediately out of soundings. Hove up the \rightarrow and continued under sail. At 10, the boat returned loaded with cocoa-nuts and boobies. At noon, latitude by a good observation,

observation, $5^{\circ} 23'S$. The extremes of this smallest range of islands from SWbS to E. off shore about $\frac{1}{2}$ a mile. No ground at 100 fathoms. Sent the boat in shore to sound a sort of harbour.

Tuesday, 2d June, 1772.

Moderate and fair. At 1 PM. the boat returned with the following report; that having examined the basin, or harbour, the bottom of which was rocks; however excessive smooth water, and water enough for a vessel to ride, provided they had a chain; and I believe room enough for about 6 sail; and, as we found the wind to blow constantly from the SE. believe it does so the whole year: but it is by no means a proper place, unless in extreme want. The boat landed within the basin with great safety upon a sandy beach. A SW. wind would be very dangerous, as it blows right in. At 4, I take my departure from the smallest cluster of islands, which are the easternmost islands of the Basses de Chagos; their body SSE. 6 or 7 leagues.

Course made good, N 27° W.

Distance made good, 91 miles.

Latitude by observation, $4^{\circ} 2'S$.

Latitude by account, $4^{\circ} 2'S$.

Merid. dist. from Trieste, $26^{\circ} 51'W$.

Meridian distance from the Islands, $0^{\circ} 41'W$.

Wednesday, 3d June, 1772.

At 3 PM. steered west, being in the parallel of the Three Brothers.

Course made good, W 3° N.

Distance made good, 116 miles.

Latitude by observation, $3^{\circ} 57'S$.

Latitude by account, $3^{\circ} 55'S$.

Merid. dist. from Trieste, $28^{\circ} 46'W$.

Meridian distance from the islands, $2^{\circ} 36'W$.

Thursday, 4th June, 1772.

Pleasant breezes, and fair weather.

Course made good, W 2° N.

Distance made good, 117 miles.

Latitude by observation, $3^{\circ} 40'S$.

Latitude by account, $3^{\circ} 53'S$.

Merid. dist. from Trieste, $30^{\circ} 43'W$.

Meridian distance from the islands, $4^{\circ} 33'W$.

Variation allowed, $\frac{1}{4}$ of a point, westerly.

Friday, 5th June, 1772.

A pleasant breeze and fair weather.

Course made good, W. $\frac{1}{2}$ S.

Distance made good, 114 miles.

Latitude by observation, $3^{\circ} 53'S$.

Latitude by account, $3^{\circ} 46'S$.

Merid. dist. from Trieste, $32^{\circ} 37'W$.

Meridian distance from the islands,

$6^{\circ} 27'W$.

Saturday, 6th June, 1772.

Moderate and cloudy weather.

Course made good, W $\frac{1}{4}$ S.

Distance

Distance made good, 117 miles.
 Latitude by observation, $3^{\circ} 53'S$.
 Latitude by account, $3^{\circ} 59'S$.
 Merid. dist. from Trieste, $34^{\circ} 34'W$.
 Meridian distance from the islands,
 $8^{\circ} 24'W$.

Sunday, 7th June, 1772.

Moderate and fair weather.

Course made good, $W \frac{1}{2} S$.

Distance made good, 125 miles.

Latitude by observation, $3^{\circ} 58'S$.

Latitude by account, $4^{\circ} 4'S$.

Merid. dist. from Trieste, $36^{\circ} 39'W$.

Meridian distance from the islands,
 $10^{\circ} 29'W$.

Monday, 8th June, 1772.

At 6 PM. shortened sail and went under an easy sail all night. Sounded every two hours. No ground at 35 fathoms. At 4 A.M. brought-to and founded; no ground at 85 fathoms.

Course made good, west.

Distance made good, 112 miles.

Latitude by observation, $4^{\circ} 5'S$.

Latitude by account, $3^{\circ} 58'S$.

Merid. dist. from Trieste, $38^{\circ} 31'W$.

Meridian distance from the islands,
 $12^{\circ} 21'W$.

Tuesday, 9th June, 1772.

At 6 PM. shortened sail, and went under the top-sails all night; the mizen top-sail aback. At 2 AM. brought-to and founded; no ground at 100 fathoms: then made sail as before. At 4, brought-to and founded

again; no ground at 100 fathoms: made sail as before; and at 5, made more sail.

Variat. allowed, $\frac{1}{2}$ a point westerly.

Course made good, $W. 4^{\circ} N$.

Distance made, 96 miles.

Latitude by observation, $4^{\circ} 16'S$.

Latitude by account, $3^{\circ} 58'S$.

Merid. dist. from Trieste, $40^{\circ} 7'W$.

Meridian distance from the islands,
 $13^{\circ} 57'W$.

Wednesday, 10th June, 1772.

Course made good, $W 15^{\circ} N$.

Distance made good, 91 miles.

Latitude by indifferent observation,
 $4^{\circ} 6'S$.

Latitude by account, $3^{\circ} 52'S$.

Meridian distance from Trieste, $41^{\circ} 35'W$.

Meridian distance from the islands,
 $15^{\circ} 25'W$.

Thursday, 11th June, 1772.

Fresh breezes, and very hazy weather. Lay-to in the night, and founded every hour; no ground at 100 fathoms.

Course made good, W .

Distance made good, 71 miles.

Latitude by observation, $3^{\circ} 53'S$.

Latitude by account, $4^{\circ} 5'S$.

Merid. dist. from Trieste, $42^{\circ} 46'W$.

Meridian distance from the islands,
 $16^{\circ} 26'W$.

Variation per evening amplitude,
 $7^{\circ} 50'W$.

Friday,

Friday, 12th June, 1772.

At $\frac{1}{2}$ past 4 PM. saw land to the southward. At sun-set the extremes of Praslin and the adjacent islands, from SWbS. to S $\frac{1}{2}$ W. distance from the nearest, which is the island Aride, 6 or 7 leagues; and a small low even island, which is not in the chart, NW $\frac{1}{2}$ W. distant about 4 leagues. This small low even island, I think, cannot be seen above 4 leagues: its latitude is exactly $3^{\circ} 53'S$. At noon the extremes of Praslin and the adjacent island, one extreme SEbE. distance about 6 leagues, the other NW $\frac{1}{2}$ W. distant 2 leagues.

Latitude observed, $4^{\circ} 15'S$.

Saturday, 13th June, 1772.

Fresh breezes with heavy squalls off the land. Working to windward for the harbour. At 4 AM. with the best bower in 13 fathoms, sand and shells. Veered to $\frac{1}{2}$ a cable, midway between the east end of Praslin and Curieuse Isles; and the northernmost extreme of Praslin W $\frac{1}{2}$ S. and the end of Curieuse EbS $\frac{1}{2}$ S.

A. M. employed in wooding and watering.

June 12. At 7 hours sounded;

30 fathoms, sand and shells. At 9 hours, 30, 25, 25, 25, 27, sand and stones; 30, 30, 28 fathoms. At 10 hours, 30, 33, 33, 30, 30, 30, 28, sand and shells. At 11 hours, 33, 30, 29, 33, grey sand and broken shells; 34, 33. At 12 hours, 30, 28, 29, 28, sand and shells. At 14 hours, 28, 29, 27, 25, 22, ditto. At 15 hours, 28, 30, 28, 28, grey sand and shells, with pieces of coral. At 20 hours, 34, 35, 34, sand and rotten stones. At 21 hours, 34, 36 tacked, 30, 27, 29, 30. At 22 hours, 25, sand and shells; tacked. At 23 hours, 23, sand and broken stones.

I shall here deliver my opinion, that these islands, where we are now at, are the Three Brothers and the adjacent islands; and will abide by that opinion, till convinced to the contrary, as there are no islands to the eastward of them in their latitude, and many to the westward; however, some others think to the contrary, on account of the high variation of the compass at this place.

The best Methods and Times for navigating Ships from Port to Port in India, in consequence of the Winds and Currents.

CCIII. *From BOMBAY to the RED SEA, in NOVEMBER and DECEMBER.*

In November and December, a ship bound from Surat or Bombay, being got once a little off shore, will have a fresh gale at NE. with which steering large, she will have a speedy passage to the Red Sea; but as it blows hard (especially westward of Soccatra) and the weather is often obscure and cloudy, it is best not to attempt seeing that island (because running past to the southward might be attended with very bad consequences). Therefore keep to the northward thereof, and fall in with the Coast of Arabia near Aden; being careful to keep the lead going, and a good look-out. Aden is an high promontory, with a bay on the east side, near to Aden, about 14 leagues long, and about 3 leagues broad, in which a ship may easily be embayed. Though Aden is high land, yet it has been taken for the Stone Islands; because the cod of the bay, being very low land, is seldom seen: however, the water in this bay is shoal; and if a ship keeps in 35 or 40 fathoms, she will neither be embayed, nor hurt by any thing on this coast.

CCIV. *From ADEN to MOCHA.*

From Aden, observe, that if the ship is not large, she may go into Mocha Road between the sands and the main, where she finds from 21 to 22 feet water, and by this means avoids much trouble. As it blows hard along shore at this season, a ship, when round the sands, can seldom luff into the road, but is often obliged to \rightarrow to the leeward, and wait (riding hard) many days, for easy weather to warp up.

CCV. *From BOMBAY to the RED SEA, in JANUARY, FEBRUARY, MARCH and APRIL.*

A ship going the same voyage in January and February, will have much the same winds, but more moderate, and very fair weather. It is best for her, therefore, to steer for the east end of the island Soccatra, taking care to be in the latitude of it, before the westing is run down, 20 or 30 leagues. The land being high, is to be seen far off, from 12 to 16 leagues; nor is there any unseen danger near it. She may range all along the north side, which lies about W $\frac{1}{2}$ N. 20 leagues; and from the west end and steer directly for Aden, heaving the lead as she draws near the Coast of Arabia.

In

In March and April, ships bound this way will have fainter and less constant NE. winds, than in the four proceeding months, and frequent winds from the NW. quarter, with fair weather and calms. The land and sea breezes, or perhaps the SW. winds and currents, being now begun near the shores of Arabia, she must (to avoid them) steer from Bombay WSW. and SW. so as to pass 10 or 12 leagues to the southward of Soccatra, and after getting in with Cape Guardafui, work up along the coast of Africa, till past the White Rock, and then cross over for Aden.

If a ship leaves Bombay in April, it is more especially necessary to keep well to the southward of Soccatra, because, if she cannot weather that island with a SW. wind, she must lose her passage. If she cannot reach the Coast of Africa, she can always work along shore high enough to fetch Aden; from whence, even in June and July, she may work up to Mocha, by keeping very near the shore. By this she will, in a great measure, avoid the currents, and sometimes (during the springs) have a current in her favour. The winds also will vary often, and be moderate; but when the winds or current are strong down the gulf, she must \rightarrow . Some late ships, by not keeping sufficiently to the southward, have lost their passage, and lain at Soccatra, till October, and then proceeded on their voyage.

The road is safe, and about the middle of the island on the north side, in depth from 9 to 7 fathoms. The people are civil; and the place affords good water, fish, fowls, some sheep and cattle.

No ship ought to keep nearer the African Coast than about 15 or 20 leagues westward of the White Rock; because there are deep bays, full of banks, rocks, and eddy currents, along the shore, till past Babelmandel. The Bay of Zeyla is remarkably so; in which the Robert galley from Bombay was near lost, about the year 1740.

CCVI. *From MOCHA to JUDDA.*

The navigation up the Red Sea, from Mocha to Judda, is the mid-channel, the shores being incumbered with many islands and shoals: among which however there are safe channels, through which trankeys sail to Judda; but these channels are unknown to Europeans.

The proper time for this passage is doubtless between October and March, when the southerly winds prevail: however a ship well found and managed will always gain her passage, by perseverance, even in May or June, the current running frequently to the northward against the winds, in those months, especially

especially in the springs. A good look-out, both night and day, is very requisite in this track; for there are seldom soundings, and the shoals are so steep, that a ship will have 10 or 15 fathoms on rocks under one end of the ship, and no ground under the other at 60 fathoms.

CCVII. From the MALABAR COAST to the RED SEA.

The navigation from Anjango, Cochin, Callicut, &c. ports on the Malabar Coast, to the Red Sea, is (at each season) much the same as from Surat or Bombay; only it is to be observed, that all ships from this coast ought to pass through the Laccadive Islands. Though ships that sail in November, December, and January, may safely pass through what part of the Laccadives they please, yet ships that sail in February, March, and April, ought not to quit the shore to the southward of 10° or 11° of north latitude. This will prevent the risque of being carried among the Maldives, by the SSE. current, and high winds, that they certainly will then find among these islands. A ship cannot well avoid being to the southward, when past the Laccadives (perhaps in 9° or 8° north latitude) instead of steering to the WSW. and SW. she ought to steer WNW. or NWbW. to get into $11^{\circ} 30'$ north latitude, and then west. This is the best track for a ship to steer that leaves the coast early in March; but late in March; or early in April, 9° or 10° north latitude is the best track; though this will seldom be found practicable, the winds blowing usually from N. to WNW.

She must therefore steer, close hauled, betwixt the WNW. and SW. as the winds will permit; then to the northward (for the SSE. currents) rather than go too much to the southward, standing sometimes a few hours NbW. N. or even NbE. But these trips ought seldom to be made, getting to the westward being chiefly wanted; and she ought by no means cross the equinoctial, nor even go beyond 2° north latitude, if it may be avoided.

When a ship, late in April, or early in May, has got within 50 or 100 leagues off the Coast of Africa, she will generally meet with from SW. to SSW. winds, that will carry her to the windward of Cape Guardafui; but if she falls to the leeward of Soccatra, in that season her passage is lost.

CCVIII. From SURAT and BOMBAY to PERSIA.

The directions in the Coasting Pilot, from Bomby or Surat, to go by Diu Head, and thence along the Coast of Guadel to Persia, are good for early ships. Those that sail in March, April, or May, ought to stand close
hauled

hauled (either from St. John's or Bombay) with the NW. winds to the WSW. and SW. till sufficient to the westward, to fetch a few leagues to the westward of Cape Rosalgat. Late in March the SW. winds will be found, near the Coast of Arabia; and in April or May, still further off shore: this renders the passage much easier than it was deemed in former times.

The Success galley, captain Barton, bound to Persia, sailed from Surat Bar, May 19, 1747, and stood from St. John's, close hauled, to the W. and WSW. till she met with the SW. monsoon, with which, on the other tack, she easily made Cape Rosalgat in 26 days, and reached Gamberoon in 30 days, from Surat.

CCIX. *From the MALABAR COAST to PERSIA.*

Ships bound to Persia from Anjango, Cochin, &c. and that can leave the Malabar Coast any time in November, December, or January, had best work along shore, with the land and sea breezes, to near Goa; and then (taking the opportunity of the first brisk northerly wind) to stretch, close hauled, over for the Coast of Guadel. If a ship in these months is (for fear of an enemy) obliged to go through the Laccadives, her best way to go through them, is as far to the northward as she can, and then, according as the wind varies, work to the northward and westward in the offing, being careful not to go too far westward. If she does not weather Cape Rosalgat 10 or 15 leagues, she will greatly lengthen her passage.

The Grandison, captain Fanton, bound to Bassorah, left Tillicherry, about the middle of December, OS. 1736, and passed through the Laccadives, in $10^{\circ} 40'$ north latitude. Having got 2° or 3° to the westward; to the northward of them, she found moderate breezes from WNW. to NE. and with them steered sometimes to the NW. WNW. and W. and sometimes N. NE. and NNE. as the wind varied, tacking every 3 or 4 hours; but upon the whole managed so, as to fall in 2 leagues westward of Cape Rosalgat. This was done in three weeks after she left Tillicherry, and it was 19 days more before she got over the Guadel Coast, about 25 or 30 leagues eastward of Cape Jasques, which she reached the next day. In rounding Cape Rosalgat she had often strong gales from NNE. to NNW. with thick hazy weather, occasioned by fine dust blowing from the shore, that covered her rigging, cables, &c.

When this ship was without the Laccadives, if she had stood less to the

E e

westward,

westward, and more to the northward, so as to have fallen in with the Coast of Guadel, her passage to Cape Jasques would have been shortened 10 or 15 days; as was experienced the same year and season by the Richmond, captain Sutcliff, and the Poultney, captain Castles, which put off from Cochin, and by working in this way, made the Coast of Guadel, along which coast they found either land or sea-breezes, or moderate easterly winds.

The Grandison also found easterly winds along this shore; nor would she have reached it in 19 days, if she had not (during the springs) met an accidental current, that carried her for 3 days from 25 to 30 miles a day, right against the wind; for it is remarkable, that at this very time she was under her courses, the wind blowing a strong gale at north.

Ships that leave the coast in February or March, ought to make the Coast of Arabia, between the islands Merceira and Cape Rosalgat. Therefore, if they pass through the Laccadives, it should be well to the northward, working to the north and west as the winds will permit, in the same manner as an early ship, but more to the westward.

The Success galley, bound to Persia, left Cochin April 20, 1757, passed through the Laccadives about the latitude of 9° ; after which she had smooth water, and steady moderate breezes, between NbW. and WbN. but chiefly from NWbN. to NWbW. With these she worked to the westward, and was careful sometimes to stand a few hours N. and NbE. notwithstanding which, by the time she had got between 11° and 12° westward of Cochin, she was near the latitude of 17° North; and as the wind was then very steady at NWbW. she tacked and stood N. E. As she stood to the northward, the wind veered gradually to WNW. WbN. and W. with this she kept close hauled N. NbW. and NNW.

As she approached the Coast of Arabia, the winds freshened, and came to WbS. WSW. and SW. with which she made the Island Merceira, and then bore away round Cape Rosalgat, with a fresh gale along shore. Being round the Cape, she had 3 or 4 days light variable winds: with which she sailed to Muscat, and ~~stayed~~ ^{anchored} in the harbour some time in May.

CCX. *Of WORKING along SHORE, near the COASTS of MALABAR and PERSIA.*

If a ship in the late months, instead of going through the Laccadives, chuses to work to the northward along shore, till near or above Goa, and then stand over for the Coast of Arabia with the first brisk northerly wind,
it

it is equally safe: this will sometimes shorten, and sometimes prolong the passage.

If the ship is at Cochin, Callicut, &c. (Malabar ports) and finds a brisk spirt from the southward, or land and sea breezes, or even moderate though pretty variable winds, from N. to WNW. (all which sometimes happen) it is much the best to coast northward; because the coast lying NNW. she really goes so much in her way as she gets. Was she put off shore, when these winds prevail near the land, she would certainly find light winds and calms among the Laccadives, and be driven to the SSE. by the current, without getting proportionably to the westward. If a ship, at leaving any of these ports, finds fresh gales, a chopping sea, and small current from NW. and NNW; it is much better to run off shore; for those usually continue 6, 8, to 15 days, near the shore; nor can a ship gain any ground by working against them; they assist her in running off shore, and there she will certainly meet moderate winds to work with.

CCXI. *In the GULF of PERSIA, from OCTOBER to MARCH.*

From October to March, a ship going either in or out of the Gulf of Persia, had best keep along the Guadel Coast from or to Cape Jasques, though that Coast is little known to us: but from March to September, mid-channel, or rather nearest the Arabian shore, is best. None ought to go within less than 2 or 3 miles off the shore, between Cape Rosalgat and Muscat; because there is no ground till extremely near the land; and sometimes tide upon the shore, which would oblige a ship to $\frac{1}{2}$ in 55 fathoms, within $\frac{1}{4}$ of a mile of the strand, under the prodigious high and long mountain of Curiatta. From Cape Jasques quite up to Karack, the best track is, to Gambaroon Road, between the Islands Larack and Ormus, leaving Kishme on the larboard side.

A ship may go between Ormus and the main, keeping close to the island; but the channel is much narrower, and there is less water than through the other. The best track from hence up to Karack, is within the Island Kishme, and all the islands along the Persian shore, except the little islands of Jarak, Indernea, Monjela, &c. that are too near the main. At Gambaroon, a pilot may be got to Carack, or Bassorah, but one, till past Kishme, is enough; for when past the strait, keeping a moderate look-out, and the lead going, is all that is necessary.

The Coast of Arabia, from Cape Musseldom to Bahareen, is unfrequented,

and therefore unknown to Europeans. Many ships go from Karack without Kishme, Polior, and all the other islands, except the Two-Tombes (Raze and Nabejou), Bomosa, Surde and Nobslure, between which last and Polior, they pass in 50 fathoms water.

They may also go to the southward of all those last-mentioned islands; but it is seldom done. Either way must always prolong the passage; because the capes and islands very much break the force of the NW. winds and currents near the shores. Along these there are usually more or less tides, and often a current, that will run 3 or 4 days to the westward. During the ebb (or if a current should happen to run eastward) a ship can always \rightarrow with safety under some cape or island; so she can, if the wind blows too hard down the gulf. The middle channel has no such advantages; for there are no perceptible tides; the currents seldom run up, but generally down the gulf; and the NW. winds sometimes blow with great fury: from them there is no shelter, nor place to \rightarrow with safety in, without losing much ground.

CCXII. *The case of the GRANDISON Captain FENTON, and Others.*

The latter end of January, 1737, at 7 A. M. the Island Karack bearing WNW. about 8 leagues, the wind at SSW. it quickly veered to SW. and blew so extremely hard, that she could carry only a reefed main-sail and whole fore-sail. Thus, close hauled, she fetched under the lee of Ormus, and \rightarrow ed in the afternoon, near the old castle. Had she been embayed between Jasques and Ormus, so as not to be able to clear the shore, she must have \rightarrow ed without any shelter, where the wind and sea were so great, that it is doubtful whether all her \rightarrow s could have held her. That evening the gale ceased, and before morning a fine land-wind sprung up from the northward, with which she ran out, and passed with veerable moderate winds up the middle channel, leaving Larack, Kishme, Polior, and all the islands near the Persian coast, to the northward, and the Two-Tombes (Raze and Nebajou), Bomosa, Surde and Nobslure, to the southward of her. Being as high as the island Basheab, she was taken with a violent gale from the NW. and after lying 24 hours under her main-sail, she was obliged to bear away, and having run within the NW. end of the Island Keyne or Quesche, steered along the inside of it, till she came a-breast of the village near the east end. There she \rightarrow ed till the weather was over, which she might as well have done under Basheab, had she been in shore the beginning of the gale; since the Richmond and Poultney, that were then working in shore, met no such bad weather.

In

In 1755, or 1756, a Dutch Europe ship, bound up to Karack from Batavia, went to the southward of all the islands, and having little wind and a current down the gulf, ~~4~~ed on the edge of the Pearl Bank, about the latitude $25^{\circ} 30' N$. The wind was at NWbN. and NNW. and greatly increased, as did likewise the sea; so that, being unable to clear the shore, they were obliged to strike yards and top-masts, &c. and at last had almost foundered with all anchors a-head. Luckily for them, they held fast till the gale was over, or every soul would have perished on that desert and inhospitable coast.

CCXIII. *From BENGAL to the COAST of COROMANDEL, &c. in AUGUST, SEPTEMBER, OCTOBER, NOVEMBER, DECEMBER, JANUARY, FEBRUARY, MARCH, and APRIL.*

From the middle of August to April, ships may sail from Bengal to any part of the bay; but either earlier or later, it is very difficult to get out of the river. Ships that are going only eastward or southward, may sail 10 or 15 days later; but those who sail after the beginning of April, for the Coast of Coromandel, will find it difficult to get to the westward, and perhaps lose their passage.

Ships that sail from Bengal, in August or September, to the Coromandel Coast, will meet with unsettled weather; sometimes moderate and fair, at other times hard squalls, thunder and much rain; the winds usually SSW. to WNW. and sometimes SSE. They should therefore keep in from 15 to 30 fathoms, close along the shore of Orixa, Golconda, &c. for the benefit of the currents that begin to run along the shore to the SW. The wind, by often blowing from the land, renders keeping near the shore difficult, especially between Vizagapatam and Armagon; and standing off shore, is sometimes very advantageous: therefore a ship ought, under these circumstances, seldom or never to go out of soundings.

By going close along shore, it is meant not to round the bays of Salang, Masulipatnam, and Montepoly; but thwart them, from point to point. Early ships will sometimes have little or no current; and even those which sail later, will sometimes find the current fail them, when southward of $17^{\circ} N$. If they keep near the shore, they will have no current against them, (except perhaps a fresh out of the adjacent river) and the winds sufficiently variable to get the passage. They make use of every opportunity that offers, and tack as often and quickly as the wind changing makes proper.

The ship Sarum, bound to Madras, was, early in September, in sight of Gordware, and from thence stood, at times, SSW. and SbW. until in latitude $15^{\circ} N$.

15°N. the weather fair, and water smooth; breezes moderate, from W. to WSW. In this latitude, finding, by observation, a current to the northward, they immediately tacked, and after losing 15 days, fell in with the high land 18 leagues to leeward of Point Gordware, which shewed the current to set north-eastward, as indeed it always does in the offing, at this season, if there is any current at all.

September 10, 1739, the *William and Mary*, bound to Madras, was at that port at sun-rise, the flag-staff bearing west, depth 28 fathoms. The wind was then a light land-breeze, and she steered at the rate of 2 knots to the southward. Finding there was a current by the water deepening, and the bearing not altering; at 10 A. M. she anchored in 35 fathoms, and found the current run, by the log, 2½ miles an hour, NE. A French ship, bound to Pondicherry, was then about 2 leagues eastward of her, and supposed out of foundings: it being almost a calm, before night she drove almost out of sight to the NE.

During the months of October and November, the navigation should be much the same as in September; but no ships go from Bengal to the Coromandel Coast in those months, because the strong NE. winds, sea, and currents, render it extremely dangerous. Some ships, on extraordinary occasions, have rid out the whole monsoon, in from 12 to 20 fathoms; this can answer no mercantile purpose, nor ought any ship to be on the coast from the beginning of October to the latter end of December.

By a storm that happened October 2, 1746, the greatest part of *Monf. La Bourdenay's* squadron was lost (after taking Madras) in or near the road.

Between the 10th and 15th of December, is soon enough for any ship to leave the mouth of Hughly or Bengal River, for the Coromandel Coast. From that time to the middle of January, the best course (supposing her for Madras) is to the SW. directly, to make Armagon Hill. As she approaches the coast, she will probably have fresh gales, and a strong current to the southward; therefore keep the lead going, and a good look-out. Armagon-Hill will be seen when she is 2 or 3 leagues without the north end of the Armagon Shoal, if the weather is not obscure; but, as that sand is very steep, it is dangerous to run in with it, when dark: whoever does, should go flanting with the sand, SWbS. or SSW. under an easy sail, casting the lead every mile she sails, and the moment she strikes ground, haul off shore, till clear of it. No stranger ought to go within the Armagon Shoal at this season, the channel being too narrow.

If a ship in the evening is short of Madras, it is better to anchor than lie-to; but if the sea is too great, turn to windward; it will save lee-way.

An Indiaman bound to Madras, in December, being off Pullicat in the evening,

ing, thinking she had drift enough, brought-to all night, in order to run into the road in the morning; but, deceived by the current, found herself off Cabelon or Couvelan, at day-light; where she \rightarrow ed, and was 8 days in warping up to the road. Had she \rightarrow ed in the evening, or turned to windward all night, this could not have happened. Another Indiaman, that brought-to off Pullicat at night, found herself off Zeloan in the morning.

At this season (toward the end of the year), it is best to \rightarrow in 9 or 10 fathoms, Madras flag-staff W. because the boats, being light when they come off, can easily row against the wind along shore, and go ashore laden with a large wind, which they could not do if the wind was much southward. \rightarrow ing to the eastward of the port, is to be observed at every port on this coast.

Early in January, a ship will find much the same currents and winds as in December, but more moderate. She ought also to follow the same track, except the easterly winds are very faint, in which case it is best to keep more to the southward, and not go within 20 leagues of the land, till in the latitude of Madras, and then run west for the road. This ought more especially to be done, if the ship leaves the Pilot in January. But whether she leaves him early or late, if (by meeting with light winds) she steers some days SSW. or SbW. and the winds should afterwards begin to blow fresh from NE. (perhaps in the latitude of 16° or 14° N.) it is best for her to steer away W. WbS. or WSW. so as to fall in with Pullicat, or rather with the south end of Armagon Sand; especially if it blows very hard, and is like to continue so.

Early in January, O. S. 1739, captain Standard, coming to Madras from Pegu, as he approached the coast, having strong gales at NE. he run directly for the road, where letting go his \rightarrow , the cable parted. The same was done with a 2d and 3d. Having then only the stream \rightarrow left, he was obliged to make sail, and run round Zeloan. Had he made the land near the Armagon Shoal, and brought-to, the gale would have been done before he drove past the road; at least he would have had time to have got down his top-masts, and when all was snug, brought up, with 2 \rightarrow , any where northward of Madras, or in the road. There the Godolphin Indiaman from China, and several other ships from Bengal, rid the gale out safely.

The ship George, captain Taylor, belonging to our company, left Vizagapatam, January 17, O. S. bound to Madras: and though the current ran near 1 knot to the northward for several days before he weighed, yet he would work along shore. The consequence was, what he got by the land and sea breezes, he lost by the current. In 6 weeks he reached the north end of the Armagon sand;

sand; and finding (after 8 days longer turning) that he could get no further, he bore away for Massulipatam for water. After staying three days, he sailed E. ESE. and SE. till he got 4° or 5° easting; where meeting the usual easterly winds, he stood S. SSW. SW. and W. till he fell in with Fort St. David, where he \rightarrow ed, just 3 months after he left Vizagapatam. He would have done this probably in a fortnight, if he had at first proceeded from Vizagapatam, as he did afterwards from Massulipatam.

The month of February is the finest month in the year, through all the Bay of Bengal.

Ships in the middle, or eastern parts of the bay, are generally sure of fine breezes from the eastward and northward; and near the western shores, they are sure of land and sea breezes, or moderate gales from the WNW. to SW.

All who are bound to the Coast of Coromandel, in this month of February, from Bengal, Orixá, or Golconda, should keep well off shore, to avoid the calms, land and sea-breezes, and NE. currents that then prevail from Zeloan to Ballasore. From Bengal (if early in the month of February) it is best to steer SbW. SSW. SW. WSW. and W. and if it blows fresh from the NE. to fall in directly with the ship's port. It will generally be better to run near the coast 8 or 10 leagues to the southward of the ship's port; because she is always sure to get back; besides, on getting soundings, or seeing the land from the mast-head, she can easily reach her port, by hauling upon a wind WNW. NW. or NNW. according as her latitude requires.

Late in February, it is best to steer (if practicable) south for some days, then SbW. SSW. and SW. &c. so as to fall in 20 or 30 leagues to the southward of your port; for about the time you approach the coast, not only the northerly currents run strong, but the SW. wind begins to prevail along shore. Therefore, you must expect being obliged, when near the land, to steer WNW. or perhaps NW. close hauled, with a leeward current; and make allowance accordingly, by keeping well to the southward in the offing while it is in your power.

About 1745 or 6 captain Hopkins was coming from the Straits of Malacca to Madras, and early in February, O. S. being past the middle of the bay, steered west, in the latitude of Madras, with light gales at NE. and ENE. Being come within 20 leagues of the coast, the wind failed, and he got into variable light airs and calms, with a current to the northward: this carried him near the Armagon Shoal, before he got into \rightarrow ing-ground; from whence he was 3 weeks working

working up into the road. Keeping 10 or 15 leagues to the southward would have prevented this misfortune.

The Success galley left the Pilot, February 13, 1757, and reached Madras the 22d instant. The Ganges left the Pilot 10 days before her, and arrived at Madras 1 day after her; so that one ship was 9 days on her passage, and the other was 20 days. The Ganges had the advantage of sailing 10 days earlier in the season than the other; but the Success was a better sailing ship. The great difference in their passage arose chiefly from this: the Success stood from the river S. SbW. SW. &c. as before directed, by this she had steady breezes from the eastward, the whole passage. The Ganges steered a more direct course to the south-westward: she went not along shore, and, by being too much to the westward, was out of the track of fair winds, and had much calm, with variable light winds, at the very time the other was sailing with a fair steady breeze, about 40 leagues to the eastward of her.

Ships bound from Bengal to any part of Orixá, or Golconda, ought (in the same manner) to keep off shore, till they are to the southward of their port, according as they are late or early, and the NE. winds are fresh or faint.

One of our Europe ships going from Bengal to Vizagapatam, in January, by not keeping off shore, was forced to \rightarrow several days off the high land of Baras or Pondy. Luckily a breeze sprung up, that carried her to her port, and saved the trouble of putting off shore, as the George was obliged to do, and by that means prolonged her passage 10 or 15 days.

Ships that leave Bengal in March or April for the Coromandel Coast, ought more especially to avoid going to the westward at first. Their best track (supposing the wind fair) is SbE. and S. keeping about 15 or 20 leagues to the eastward of the meridian of Point Palmiras, till in the latitude of 13° or 12° north; and then SSW. and SW. till they see Zeloan, about Batacalo.

As the SW. winds range the coast of Orixá at this season, instead of a fair wind, ships usually leave the Pilot with a fresh gale between WSW. and S. In this case the best way is to steer, close hauled, to the SSE. or even ESE. (rather than tack) as the wind will permit. These courses will, in a few days, bring them into light breezes, usually from the NE. quarter, with which they ought to steer S. SbW. SSW. &c. till they see Zeloan, as above.

The wind will sometimes continue so long in the SW. quarter, that a ship will be 3° or 4° to the eastward of Point Palmiras before they change, and perhaps in latitude 15° . In this case, when the wind comes fair, it is best to shape her course direct for that part of the bay in latitude 13° or 12° and 20 leagues east

of Point Palmiras; and from thence directly to Batacalo, and stand upon either tack as the wind will permit.

The NE. breezes commonly begin between 17° and 15° N. when well to the eastward; but sometimes after leaving the Pilot, you will have light WSW. W. WNW. and NW. winds, and so continue till the ship is in the latitude 14° nay 13° : let nothing, however, induce you to go westward of the meridian prescribed, but steer south. By doing this, you will certainly have easterly winds at last, which to the westward you would not have: or at least they would be short, weak, and unsteady, with much calm. On the other hand, it is by no means adviseable to go near the Andaman Isles, because they make a dangerous lee shore, with a gale from the westward; which sometimes happens late in April.

About 26 years ago, the captains Jones, Warwick, &c. going this passage, were all lost on those islands, by such a gale.

Ships that sail before the middle of March, and are bound to the northward of Madras, need not see Zeloan, but being got into latitude 10° or $10^{\circ} 10'$ north, may steer west for the coast. They will always fetch to windward of Madras; because they will not get into the SW. winds and northerly currents till near the land; but ships that sail later, or even at that season, if bound more southerly ought to see Zeloan, and from thence coasting (not too near Point Pedra) may cross the gut to Negapatnam, and visit every other port on the coast.

Sometimes squalls (usually light) with thunder and rain, happen in this passage, especially near Zeloan: these are of great advantage to late ships, in this alm season. They ought to be very careful, when the weather is fair, and the breezes variable, to carry what small sails they can muster, and trim to every breeze that offers; which is too often neglected, especially in large ships.

By following this method of navigation, and those hereafter mentioned, from Madras, some ships (even heavy-sailing ones) make annually 3 voyages from Bengal to Madras, and back again. Many seamen think that a good sailing ship, well fitted, and dispatched quickly from each place, may make 4; but by the neglect of this management, many ships either lose or prolong their passage.

Three European ships left the Pilot some time in April, 1758, and were 3 months going to Madras. A poor country ship failed several days after them, and got there in 30 days. Whoever compares their journals with what is written above, will easily see in what they erred.

CXXIV. *From BENGAL to SURAT and BOMBAY, in AUGUST, OCTOBER, DECEMBER, JANUARY and MARCH.*

Ships that leave Bengal between August 15, and October 10, for Surat, must work close along the shores of Orissa, Golconda, and Coromandel, to Madras or Pondicherry, as is already directed; and from thence (as the winds are usually variable in October) steer over for Zeloan, taking care not to go too far from the shore, for fear of losing the current; except it is late in October, or the winds hang easterly. In either of these cases it will be best to stand off shore, for fear of being entangled in the bite. Come no nearer Zeloan than from 10 to 20 leagues, 'till about the latitude $7^{\circ} 20'$ or 7° : there it is proper to see it, because the current runs swiftly round the islands. From thence (having coasted round the Basses) keep pretty near the shore, till you see Columbo; and then stand off for Cape Comorin.

The winds and weather in October, round the south side of Zeloan, are unsettled: sometimes there are hard squalls from the land; at others much calm, or trifling and even fresh winds from the sea, with squalls and rain. The squalls always give warning; and it is proper, at this season, for ships to \rightarrow , when they see them coming off shore, to avoid being driven from the island. The same ought to be done in calms when the current sets off shore.

By neglecting this caution, captain Pearse, in the *Sarum*, was driven among the Maldives, in 1738.

If ships, at this season (having coasted round Zeloan, so far as the Barberin island) are taken with a brisk gale from the northward, it is best to stand over, close hauled, for Cape Comorin, and not lose time in working up to Columbo; but Barberin island should bear east before you quit Zeloan.

In crossing Tutta-careen Bay, the winds will be found variable, sometimes fresh, and often faint; but a ship having reached Cape Comorin about the middle of November, will have fine land and sea breezes to work along shore, quite to Surat. Those land and sea breezes sometimes blow off shore about WSW. and sometimes on shore ENE; but this is seldom. The wind generally comes off shore in the night, at NE. NNE. and perhaps N. and the sea-winds generally come in the forenoon, at W. WNW. and NW. a short calm usually, though not always, intervening. You must there edge so far off shore, with the land-wind, that the sea-breeze may bring her in again to stretch off with the first of the next land-wind. This will commonly be done by steering with the land-breezes NWbN. NW. NWbW. or for an hour or two WNW; and with the sea-breezes

breezes NbW. N. NbE. and NNE. according to the distance off shore, and as these breezes are more or less northerly, and of short or long continuance.

By this management a ship makes all possible advantage, on each tack, that can be made, and often saves the trouble of \rightarrow ing; whereas, if she has not sufficient offing when the sea-winds begin, she will be in with the land, and be obliged to \rightarrow before it is half done. By this means a fine stretch of 8 or 10 miles to the NbW. and N. will perhaps be lost: and on the other hand, if she stands too far off shore, the sea-breeze may fail before she is within 6 or 8 miles of the land. In such a case, a good part of the land-wind will be done before it reaches her: and if it falls calm, and the swell or current sets to the southward, she must \rightarrow in deep water.

The direction and strength of those land and sea winds, being subject to great variation, a diligent observer should endeavour to learn how far he should stand off shore, and when he ought to \rightarrow . If the inequality of those winds sometimes hinders him from making the most of them, the loss will be small, and the error one day will be rectified by the next, either by \rightarrow ing between the breezes, or steering more or less off or toward the land, or going a greater or less distance from the shore, as the case shall require.

Between the middle of October and the middle of December, ships will commonly find light or moderate gales, just after leaving the Pilot. As they go to the southward, they will usually have fresh gales north-easterly, with squalls and cloudy weather, especially drawing near Zeloan; and as the current then runs strong to the westward, the best course for some days is SbE. then S. SbW. SW. &c. so as to make Zeloan in latitude 7° or $7^{\circ} 20' N$.

The current renders the difference of longitude very precarious. When she comes into latitude $8^{\circ} 20' N$. she ought to run west all day (looking out well for the land at mast-head) SWbS. or SSW. and in the night carrying an easy sail, heaving the lead every 2 miles run, and keep a good look-out. If the land is seen northward of $7^{\circ} 30' N$. she ought to haul off, for fear of being entangled with a lee-shore.

By not following these cautions, many ships have been lost.

About December, 1734, captain Tolson, in the Heathcote Indiaman, bound from Bengal to Bombay, by steering SSW. from the Pilot, run a-ground in the night, on the sand near Point Pedra. The people were about quitting her in the long-boat, when they found the sea had beat over the bank into deep and smooth water. An \rightarrow was immediately let go, and by that means the ship was saved.

A year

A year or two afterwards, captain Montgomery, in the defence Indiaman, going the same voyage, at the same season, found himself, unexpectedly, close to Zeloan. He immediately hauled to the south-eastward, and the ship struck thrice on the south end of the bank near Batacalo; yet having fresh way, she quickly got into deep water, and was saved.

Captain Sutcliffe, in the Richmond, 1736, bound from Bengal to Bafforah, left the Pilot, steered SbE. S. SW. &c. and being at noon in latitude 8° N. steered west to make the land, but at sun-set could not see any. He ordered the same course to be continued till mid-night, and then hauled up to SSW. At 10 P. M. they saw the low land, and breakers right a head: immediately they hauled their wind SEbS. (the wind being at EbN. with a large sea) and by carrying a pressed fail, just cleared the shore. In this run it is remarkable, that neither the captain nor the officers, by the log, had made above $2^{\circ} 30'$ meridian distance, west from Point Palmiras, when they saw the breakers; though the usual westing to the east side of Zeloan is from 4° to 5° . They were no more than 7 days from the Pilot: this sufficiently shews how strong the current runs westward in this month.

A fine ship, bound to Surat, belonging to Mr. Williamson, was lost near Batacalo, by the captain's obstinately running directly in with Zeloan in the night, December, 1754. Captain Richards also lost the Eagle, and his life, by neglecting his lead, and running in with Zeloan in the day-time, in thick weather. The Indiana was very near sharing the same fate at the same time.

March 3, 1754, the Success galley, captain Duncan, bound to Surat, left the Pilot, when Point Palmiras was judged to bear WSW. 12 leagues distance, with light (but mostly fair) winds. She stood out from S. to SbE. for 3 days, and for 5 days more stood close hauled, to the SE. having the wind between the south and west, but mostly from SWbS. to SWbW. She was that day (March 10) at noon, in latitude $13^{\circ} 36'$ N; and $2^{\circ} 25'$ meridian distance east from Point Palmiras. Next day, with variable light winds, she sailed SbE. 34 miles, and at noon was in latitude $12^{\circ} 56'$ N. and meridian distance $2^{\circ} 33'$ E. then a brisk breeze sprung up at NNE. with which she run 134 miles SbW. in 28 hours; and in 20 hours more 133 miles: then her latitude at noon (March 13) was $8^{\circ} 50'$ N. and meridian distance $1^{\circ} 16'$ E. Next day, with a fresh gale at NE. some squalls and rain, she run S 51° W. 154 miles; her latitude was then $6^{\circ} 53'$ N. meridian distance $0^{\circ} 26'$ W. from Point Palmiras. March 15, with the same winds and weather, she ran S 77° W. 108 miles, and found a northerly current of 21 miles: her latitude was $6^{\circ} 50'$ N. and meridian distance $2^{\circ} 12'$ W.

Next

Next day she had less wind from the same quarter, and ran 95 miles S 74° W. and found only 5 miles northerly current; her latitude being $6^{\circ} 30'$ N. and meridian distance $3^{\circ} 42'$ W. from Point Palmiras. The 3d day following, with unsettled weather, much rain, and variable light winds, chiefly from NNW. she steered to the westward; so that the 19th at noon her latitude observed was $6^{\circ} 0'$ N. and meridian distance $5^{\circ} 23'$ W. From this she steered about N. W. 6 miles, and saw the Elephant on Zeloan bearing NWbN. 7 leagues off, and at the same time had a small current to the south-westward. March 20 and 21, she coasted (with fine land and sea breezes from NE. to SEbS.) round to Point Gaula: and the last of those days, at noon, that town bore NbE;E. 7 leagues off. From thence, with a fine gale at SE. she stood over for Cape Comorin, N 49° W. 78 miles. On the 22d, and the next day, the wind veered to WbS. SWbW. and SW. with which (close hauled) she made her course N 40° W. distance 63 miles. The 24th she continued the same course with the same winds, till midnight; then they had 25 fathoms, and were by account, in latitude $8^{\circ} 0'$ N. meridian distance $2^{\circ} 13'$ W. from Gaula Town. She continued to steer NWbW. 9 miles further, and being in 12 fathoms at 5 A. M. stood off SbE. $4\frac{1}{2}$ miles. They were then about 7 miles off shore, saw the cape bearing WbS. a great way off; and were plagued 3 days before they got round it.

Being past Cape Comorin, she had land and sea breezes, with which they reached Cochin in 3 days, where, having filled her water, &c. April 7, she sailed for Surat.

For 6 days she had brisk breezes, between WSW. SWbW. and SW. and sometimes to NW. NNW. N. and NbE; so that her latitude was 10° N. and meridian distance $3^{\circ} 41'$ W. from Cochin. The 14th (after running 8 miles SW from this point) she saw the two small islands, called Seuhelipar, to the WNW. 3 leagues off; which, by this account, lie $3^{\circ} 55'$ W. from Cochin, in latitude 10° N. This day she had light trifling winds, with some squalls and rain, that ended with fine light breezes from SE, with which she ran two days, nearly NWbW. and was then (the 16th at noon) in latitude $11^{\circ} 14'$ N. and $5^{\circ} 57'$ W. from Cochin. The next day she had light winds from SSW. to N, with which she made her course N 40° W. distance 38 miles. The 18th she sailed, sometimes on one tack, and sometimes on the other, so as to make her course N 41° W. distance 21 miles; the winds light and variable. The 19th, she had for 5 hours a brisk breeze, at NEbN. and the other part of the day, light winds from NW. to N. steered as yesterday, sometimes from NWbN. to NNE. at others from WSW. to WNW. course N. 50° W. distance

distance 49 miles, latitude observed at noon $12^{\circ} 19' N.$ and meridian distance $7^{\circ} 14' W.$ The 20th and 21st, steady breezes from N. to NNW, stood close hauled, W. and WNW. and the 21st, at noon, was by observation in latitude $12^{\circ} 21' N.$ and $9^{\circ} 28' W.$ of Cochin. Laid her head to the north-eastward, with the wind NNW. (sometimes NWbN.) stood NE $\frac{1}{2}$ E. to NEbN; so that the 23d, at noon, was in latitude $13^{\circ} 46' N.$ and meridian distance $7^{\circ} 49' W.$ The 24th, the winds more westerly, viz. NWbN. to NW. and NWbW. stood as before, close hauled, from NE $\frac{1}{2}$ N. to NbE. latitude at noon $14^{\circ} 56' N.$ and meridian distance $7^{\circ} 15' W.$ The 25th, the winds still more westerly, viz. NW. NWbW. and WNW. stood 18 hours from NNE $\frac{1}{2}$ E. to N. and to chase a galley, not 6 hours from WSW. to SW $\frac{1}{2}$ W. latitude at noon $15^{\circ} 34' N.$ and meridian distance $7^{\circ} 8' W.$ The 26th and 27th, steady breezes from NW. to WNW; stood sometimes on one tack, and sometimes on the other; so that the 27th at noon, her latitude was, as before, $15^{\circ} 34' N.$ and meridian distance $8^{\circ} 8' W.$ The 28th and 29th, variable faint breezes and calms. The 29th at noon, latitude observed $16^{\circ} 30' N.$ and meridian distance $8^{\circ} 17' W.$ The 30th, and May 1st, a fine breeze at W. and S.W (chiefly SW.) steered N; and the 1st at noon, was in latitude $18^{\circ} 44' N.$ and meridian distance $8^{\circ} 17' W.$ May 2, steady breezes from SSW. to WNW; steered the first 6 hours NbE. then 12 hours NNE. and the last 6 hours NE; direct course N. $27^{\circ} E.$ distance 82 miles, latitude observed $19^{\circ} 45' N.$ meridian distance $7^{\circ} 40' W.$ The 3rd, steady breezes from WNW. to WSW. steered first 24 miles NE. (in 7 hours) then 21 miles ENE. (in 5 hours) and had soundings 30 fathoms, grey sand: this was midnight. She continued her course till noon between E. and ENE. latitude observed $20^{\circ} 15' N.$ and meridian distance $6^{\circ} 23' W.$ the depth increased to 42 fathoms. Next day, with a fresh breeze at WSW. she steered between ENE. and ESE. (having no less than 17 fathoms, soft ground) so as to make at noon her course E. distance 85 miles, latitude observed $20^{\circ} 15' N.$ and meridian distance $4^{\circ} 58' W.$ The high land of St. John's bore them EbS. distance 9 leagues. The gale continued fresh from the westward, and run her to Surat Road next day, viz. May 5, 1754.

The same ship (namely the Success Galley) bound to the same port, under the command of the same person, left the Pilot, next year, March 6, and being in 20 fathoms water, Point Palmiras WbS. 20 leagues off, with fresh gales from SSW. to WSW. run, close hauled, to the south-eastward; so that, on the 8th at noon, her latitude observed was $17^{\circ} N.$ and meridian distance from Point Palmiras $2\frac{1}{2}^{\circ}$ eastward. The winds became now more moderate, and the water smooth;

smooth; so that the next two days she steered S. 187 miles, with fine light breezes between WbS. and SW. the latitude observed at noon (the 10th) being $13^{\circ} 44'$, and meridian distance 2° eastward. The wind now veered to NbE. and continued to blow, between that and east, a fine gentle breeze, and pleasant weather for 11 days, with which the ship went as follows; viz. March 11, $S5^{\circ}W$. 75 miles, latitude observed $12^{\circ} 26'N$. meridian distance $2^{\circ} 24'E$. The 12th, $S17^{\circ}W$. 63 miles, latitude observed $11^{\circ} 26'N$. meridian distance $2^{\circ} 6'E$. The 13th, $S28^{\circ}W$. 62 miles, latitude observed $10^{\circ} 30'N$. meridian distance $1^{\circ} 37'E$. The 14th, SW. 66 miles, latitude observed $9^{\circ} 46'N$. meridian dist. $50'E$. The 15th, $S53^{\circ}W$. 65 miles, latitude observed $9^{\circ} 6'N$. meridian distance $0^{\circ} 2'W$. The 16th, $S48^{\circ}W$. 48 miles, latitude observed $8^{\circ} 31'N$. meridian distance $38'W$. The 17th, SW. 48 miles, latitude observed $8^{\circ} 4'N$. (which is 7 miles northward of account) meridian distance $1^{\circ} 12'W$. The 18th, SW. 100 miles, latitude observed $7^{\circ} 12'N$ (which is 19 miles northward of account) meridian distance $2^{\circ} 23'W$. The 19th, $SW\frac{1}{2}W$. 97 miles, latitude observed $6^{\circ} 24'N$. (which is 13 miles northward of account) meridian distance $3^{\circ} 38'W$. The 20th, steered W. all the day, and SW. in the night, her true course $S70^{\circ}W$. distance 90 miles, latitude observed $5^{\circ} 47'N$. which is 6 miles northward of account) meridian distance $5^{\circ} 2'W$. The 21st, she ran the first 3 hours WNW. 19 miles; and then saw Zeloan bearing NbW. continued the same course 192 miles more, till sun-rise; when she ran WbS. 8 miles, and W. 43 miles; then saw Adam's Peak, NNE. off shore 4 leagues. Point Gaula was then judged to bear ENE. 6 leagues off. She steered westward till noon, and then was, by observation, in latitude $5^{\circ} 56'N$. meridian distance from Point Gaula $35'W$. With this day the NE. winds ended. The next 4 days she had, as before, fine serene weather, and very light breezes, chiefly from SEbE. to SW. sometimes WSW. with which she steered NWbW. and NW. The 25th at noon, her latitude observed was $7^{\circ} 27'N$. and meridian distance from Gaula $3^{\circ} 6'$ westward. The 26th, the wind veered to WbS. W. WNW. and NW. with which she steered 13 hours, close hauled, 37 miles, NWbN. NNW. N. and NNE. and then (at 1 A. M.) saw the land a-head, in depth 18 fathoms, coarse sand and shells. She then tacked, and lost two days in working round the cape. From March 28, (when she passed Cape Comorin) to April 11, was pleasant weather, with smooth water, and variable light breezes, mostly from NNW. to W. and once or twice a faint land-breeze: with these she worked along shore, often \rightarrow ing; because off shore there was usually a current of from $\frac{1}{2}$ to 1 mile an hour to the SSE. and SE. which would have obliged her to \rightarrow in

in deep water, if it fell calm, or to lose ground: for this reason she avoided going too far off shore.

She ~~+~~ed one day at Cochin, another at Tillicherry; and April 11, was off Mount Dilla. The two next days she made but little way; squally weather, with much thunder, lightning, and rain. The 15th at noon, her latitude observed was only $12^{\circ} 17'N$. Mount Dilla then bearing $SE\frac{1}{2}S$. off shore 4 leagues. From this day, till she reached Surat, she had smooth water and pleasant weather, with which she steered as follows, (viz.) April 14th, with a fine gale from SSE. to S. she ran 121 miles NNW. and NW. and at noon was in 40 fathoms water, latitude observed $13^{\circ} 37'N$. about 10 leagues WSW. from Basalore. As Angria's fleet made it dangerous to pass further along shore, she put off, April 15, with mostly from WSW. to SWbW. winds: she made her course $N50^{\circ}W$. distance 47 miles, latitude observed $14^{\circ} 14'N$. meridian distance $1^{\circ} 4'W$. from Basalore. The 16th, with steady breezes, from NWbN. to WbN. steered, close hauled from WbS. to SWbW. all day except 3 hours that she stood NbW. and N. and made her course good, $S69^{\circ}W$. distance 56 miles, latitude observed $13^{\circ} 54'N$. meridian distance $1^{\circ} 56'W$. The 17th, brisk breezes at NWbN. to N. ran, close hauled, from WbN. to WNW. and made the course W. distance 83 miles, meridian distance $3^{\circ} 19'W$. and latitude observed $13^{\circ} 37'N$. (which was 17 miles to the southward of account). The 18th, brisk breezes, from NbW. to NW. steered, close hauled as yesterday, and made her course $S80^{\circ}W$. distance 30 miles, latitude observed $13^{\circ} 7'N$. (which is 14 miles southward of account) meridian distance $4^{\circ} 51'W$. The 19th, she stood still to the westward, with more moderate breezes, from N. to NW. and made her course $N85^{\circ}W$. distance 49 miles, latitude observed $13^{\circ} 7'N$. (which is only 5 miles southward of account) meridian distance $5^{\circ} 50'$ westward of Basalore. The first part of the 20th, with light winds from NbE. to NbW. she steered from NWbW. to WbN. 39 miles, then from NNE. to NE. 17 miles, the wind at NWbN. and NNW. at noon her true course was $N44^{\circ}W$. distance 36 miles, latitude observed $13^{\circ} 19'N$. (which was again 14 miles to the southward of account) meridian distance $6^{\circ} 15'W$. of Basalore. The next 4 days, with moderate breezes between NNW. and W. (chiefly from NWbN. to WbN.) she stood, close hauled, from NEbN. to NNW. and the 24th at noon, was $5^{\circ} 12'W$. meridian distance from Basalore; latitude observed $17^{\circ} 50'N$. She then edged away, (having much the same wind, but fresher,) all the 25th, NNE;E. 100 miles. The 26th, from midnight till noon, steered NEbE. 64 miles; her meridian

distance was then $5^{\circ} 52' W.$ from Bafalore, latitude observed $20^{\circ} 9' N.$ depth 20 fathoms, mud. Not seeing the land that night, they steered till 10 P. M. from EbN. to ENE. 45 miles; in depths 18 $\frac{1}{2}$, 17, 17, 16, 16, 16 $\frac{1}{2}$, 18 fathoms; from 10 to 11, P. M. run 7 miles EbN. and deepened to 20 fathoms; hauled up NE. 7 miles till midnight, and then NEbN. 19 miles till sun-rise; when she was in 13 fathoms, and saw the land from the mast-head, about ESE. At 8 A. M. she \rightarrow ed during the last quarter ebb, that runs 3 knots; and in the afternoon ran up to Surat Read.

A ship having reached Zeloan, ought to coast round it, at a moderate distance, to Point Gaula: she will have no occasion to \rightarrow , there being now no land squalls or calms, but a brisk gale and strong current to the eastward. About Point Gaula the gale will begin to fail: she ought therefore to keep nearer shore, and avoid opening Tutta-careen Bay, till as high as Barberin Island, and from thence stand over, close hauled, for Cape Comorin. Ships at this season, will commonly have fair weather, and a fresh gale, between N. and NEbN. If this gale prevent you getting quite so high as Barberin Isle, it is generally better to stand over, than lose in working along shore.

From Cape Comorin, ships ought to work up the coast with land and sea breezes, as is already directed. If these breezes are intercepted by a brisk gale from NNW. to NW. which sometimes happens in December for 3 or 4 days) they should turn to windward, or (if nothing can be gained that way) \rightarrow till the gale ceases.

Ships leaving Bengal between the middle of December and latter end of January, will usually find much less current, and fairer weather, with steady (but more moderate) gales from the NE. than in the preceding month. A SbW. course, with the Pilot, is now best for some days, then SSW. &c. going almost in a right line for that part of the bay in latitude $7^{\circ} 30' N.$ and from 20 or 25 leagues eastward of Zeloan. From thence they ought to steer W. &c. as already directed, and make the island about Julius Nave, or in latitude $7^{\circ} 0' N.$ the weather will then be fine, and the wind fair: with this they should coast round to Point Gaula, and (having brought that point eastward) stretch over to Cape Comorin, with a moderate (perhaps a brisk) gale from N. to NEbN. which is usual at this season.

The direction to navigate from Bengal to the Coromandel Coast, in February and March, is pretty sufficient, with regard to the Bay of Bengal. Let it be observed, that the meridian of Point Palmiras should not be passed till in the latitude of $10^{\circ} N.$ If, at leaving the Pilot, the ship is forced by the usual SW,

SW. Winds to the SE. when a fair wind comes, let her shape her course for that point that lies south of Point Palmiras, in latitude 10° , or $9^{\circ} 30' N$. From thence let her steer SW. SWbW. and WSW. for the south side of Zeloan, between, the Elephant and Dundre-head: and (as no time should be lost) let her not shorten sail; but when in latitude 7° or $6^{\circ} 30' N$. steer about west in the day, and SW. all night. This perhaps may carry her into $5^{\circ} 30' N$. but it matters not, she will have the better wind for it. When her westing is run down, (which is about $5^{\circ} \frac{1}{2}$ from Point Palmiras to the Elephant) then a WNW. or NWbW. course will always bring her in with the island.

To the southward of $8^{\circ} N$. and about 2° westward of Point Palmiras, ships usually find a northerly current of from 10 to 20 miles a day; this is what runs along the north-east side of Zeloan, and requires 2 or 3 days to cross it.

When Zeloan is plainly seen, it is proper to keep 7 or 8 leagues off shore; because near Point Gaula a brisk gale from SW. often begins, with which a ship stretches over to Cape Comorin. Sometimes she is not able to weather it: this causes a loss of 2 or 3 days to work round.

From Cape Comorin, she must work along shore as well as she can, till it happens to blow fresh down the coast: it is then best to stand off shore (as if bound to Persia) through the Laccadives; but this ought not to be attempted till in Latitude $10^{\circ} N$. for fear of being driven by the southerly current, among the Maldives. Should weak land and sea breezes, moderate variable winds, or southerly winds prevail, her best way is to keep along shore, and not stand off till she can gain nothing; and that perhaps may be in latitude 14° or $15^{\circ} N$. She need not stand to the westward, so far as ships bound to Persia, for her business is chiefly to the northward. As she gets nothing, the wind will commonly veer to the westward, and drawing near St. John's, it will come to WSW. and SW.

The following abstracts of two pretty well-conducted voyages, by captain Duncan, at this season, will set the whole in a clear light: only observe that in both voyages, he took too wide a range in the bay. In the 1st voyage, when the wind came NNE. (being March 10, at noon) in latitude $12^{\circ} 56' N$. meridian distance $2^{\circ} 33' E$. from Point Palmiras; and in order to bring that point N. in the latitude of 10° , instead of steering SbW. and SSW. he ought to have steered SWbS; W. and SW; W. and then for Zeloan, as above directed.

In the 2d voyage he took less range, but still too much; for the track prescribed is best.

In both voyages he kept too near Point Gaula, and thereby lost 2 days each

voyage in doubling Cape Comorin. It is true, his nearness to Zeloan could not be detrimental, if at leaving it with the wind at SE. March 22, 1754, and March 22 and 23, 1755, he had steered W. for some time, and then WbN. &c. so as to be sure of weathering the Cape: but no person ought to trust to that; because sometimes the wind sets in fresh from SW. earlier than the latter end of March.

The latter end of February, 1747, captain Rannie, in the ship Fanny, bound to Surat, had the hay-cock over Point Gaula bearing N. off shore 10 leagues: then the wind set in fresh from SW. to WSW. with which she carried a pressed sail a-cross the bay, in order to weather the Cape; but could not fetch it by 10 leagues, and was 3 days in going round it, after making the land.

Let it be remembered, that ships bound to Surat, who leave Bengal a little later than the Success Galley did, run the risque of losing their passage.

The Leslie lost her passage round Zeloan in March; and the Two Brothers bound to the Maldives, who left the Pilot March 23, NS. 1739. Captain Riccards, in the Ann, lost his passage round Zeloan the same year, by falling in with Batacalo.

CCXV. *From the COROMANDEL COAST to BENGAL in JANUARY, FEBRUARY, MARCH, APRIL, MAY, JUNE, JULY, AUGUST, SEPTEMBER, and OCTOBER.*

Between the 10th of January and 1st of February, the current commonly begins to creep to the northward, close to the shores of Coromandel; the rains are then done, and the weather grows mild and fair. The NE. winds, that have blown strong near 3 months, are now moderate; or perhaps land and sea breezes, from ENE. to WNW. prevail.

Ships bound to Bengal from Madras, Pondicherry, &c. ought now to work close along shore, to the northward, in the same manner as they are directed to the southward, in the month of August, when bound from Bengal to this coast: they ought likewise to be careful not to go any distance from the shore; because whoever does so, instead of a northerly current, with land and sea breezes, will probably get into calms, and a southerly current. They ought not now, nor in August, to be afraid of the shore; but work near, and keep the lead going, and a ship ready to stay.

The current has not, for many years, changed, in Madras Road, sooner than December 30, OS. (or January 10, NS.) That happened in 1745, when governor Morfe dispatched the Exeter, captain Weston, for Bengal; and a few days afterward, the Falmouth, captain Field. Both ships got their passages in 12 or 15 days; did all their business in Bengal, and were dispatched to Europe in March;

March; but neglecting to heave the lead, the Falmouth was almost a-shore on Due Point.

On the other hand, the current has been known not to change till the latter end of January. The *Britannia*, captain Sumner, sailed out of Madras Road, January 8, OS. (or January 19, NS.) 1751, and could not get above where she stood in 6 days. She then returned to the road, and waited till the current changed, which happened that season to be about January 25, OS.

In March and April, ships bound to Bengal are generally sure of either land or sea breezes, or southerly winds; their best way is therefore to work as above, only it is not so necessary to keep close to the shore till past Vizagapatam. Now, by keeping near the shore, the passage will be got sooner.

During the next 4 months, ships generally find fresh gales from the SW. quarter with cloudy weather; and along the coast of Golconda, Oriza, and Bengal, frequent squalls with rain.

Their best course from Madras Road is NE. till near the latitude of 16° N. then NEbN. or NNE. in the day, and NE. in the night: this will commonly bring them in with the land about Pondy or Barras: if it does not, they ought immediately to haul up NbE. N. or NbW. in order to reach the shore.

There are instances of ships that have stood as above, till in the latitude of Vizagapatam, and from thence NNE. and NbW. night and day; yet have only fetched in with the False Point, and been puzzled to know whether it was the False or True Point; which, in the night especially, is essentially necessary.

Ships may steer in shore with any part of the land from Negapatnam to Ballafore, provided they heave the lead every $1\frac{1}{2}$ or 2 miles run; for there is not so much as 30 fathoms, 3 miles off shore, any where all along the coast, except on the east side of the Armagon. When ships run directly in with that land, the lead should be heaved every $\frac{1}{2}$ mile they run.

Being got in with any part of the land, they ought to steer along shore NE. and NEbE. in from 25 to 30 fathoms water, keeping the lead going. When they draw near Manikpatnam, the water will shoal, and they must haul more to the eastward; because on that coast the land stretches so. Let them pass Manikpatnam in 15 to 16 fathoms; then steer in from 12 to 14 fathoms, till past the Black Pagoda; and then in about from 17 to 18 fathoms to the False Point. From the False Point to the True Point, in from 15 and 17 fathoms, are the best depths; and not less than 13, nor above 16 fathoms, is the proper track to round Point Palmiras.

As soon as a ship, in from 14 to 15 fathoms, has got soundings upon the hard
land

land off Point Palmiras, she ought to steer north about 15 leagues, and then NNW. and NWbN. and NW. till in 9 fathoms, where the pilot sloops usually lie at 4-5.

Captain James Sterling, in the ship *Jenny*, from Bombay, June 1738, died in the evening, between the points, being afraid to round Point Palmiras in the night.

In June or July, 1737, the (Europe ship) *Devonshire*, captain Prince, and the *Lessie*, captain Acton, coming from Madras to Bengal, were so much afraid of the land, that they kept off in deep water: this carried them without the hard soundings that lie off both points; and they came into shoal water among the sands, near Sagor, before they thought of hauling up for Ballasore Road. The shoal, soundings, and their quadrants, shewed their error. After fatiguing their people, and tearing their ships, sails, and rigging to-pieces, in working against the monsoon (in strong gales, a great sea, many squalls, and rain) chiefly under double and treble reefed top-sails; at the end of a fortnight, they reached Ballasore Road. If any accident had happened to their lower masts, they would, (probably) never have been heard of. The Aracan and Chittagong rivers, which are to the leeward, cannot be approached at this season, without extreme danger, especially by ships in distress.

The case of the *Elizabeth* Indiaman; July 17, 1749; that of the *Two Brothers* in July, 1739; with Mr. Miller the pilot's mistake about the points, &c. Extracts of captain Duncan's journal, viz. January 10 at noon, and most part of the next day, 1754; June 18 and 19, 1756; June 8 and 9, 1755; March 10 and 11, 1756, would illustrate this subject farther; but they are not come to hand.

From Vizagapatam to Manikpatnam the land is mostly high, and the shore lies NE. and NEbE. From Manikpatnam to the Black Pagoda, the land is low, and nothing remarkable is upon it, but Jagrenat and the Black Pagoda. The coast stretches ENE. and EbN. from the Black Pagoda, quite round Palmiras to Canacka Bay; and the land is so very low, that no mark can be seen to ascertain where a ship is, except some scattered trees, and low sandy hillocks. These may be seen in fair weather; but then they are known to good pilots only, or people who have long frequented the trade. The shore lies NEbE. and NE.

From Manikpatnam to near the Black Pagoda, there is (along shore) a flat, hard sand (chiefly brown) that reaches from the beach to 14 fathoms water: further off this, soft ground, mixed with sand: without that is all soft ground. From the Black Pagoda to the False Point, and from thence to Point Palmiras, the

the ground is hard sand, from the beach to 7 or 8 fathoms water. Further off is soft ground, in some places black, in others greenish, often mixed with dark-coloured sand, and a few broken shells.

The hard flat sands that run out from Point Palmiras and False Point, are too much alike to be distinguished by their soundings, or any other good mark. Each has much the same depth, at the same distance from the shore; each has various coloured sand, chiefly brown, with stones and shells; and each stretches a great way into the sea. That off Point Palmiras stretches into 21 and 22 fathoms; that off False Point, into 18 or 19 fathoms. In those depths the spits being very narrow are quickly past, and often without being felt by the lead.

In order to avoid bad consequences of mistaking one point for the other, (which is either being embayed between them, or running past Ballasore, among the eastern sands) a ship's only guidance is the latitude observed, distance run, and the soundings. An observation is often not to be had; and the distance run (if she has been long from seeing any known land) is very precarious, on account of currents. You ought therefore to endeavour to see either Jagrenat or the Black Pagoda; and for that purpose keep well in upon the sand that lies at a good distance from the shore. Near Jagrenat, in from 11 to 13 fathoms water, you will not pass it unseen, even if the weather should be a little hazy. Your distance from thence to the False Point is too small to admit any considerable error, if the log is well attended to; consequently, both your distance run, from seeing the Pagoda, and the hard soundings off False Point, will ascertain where you are; and you may boldly stand on NEbE and NE. to Point Palmiras. If, after seeing the high land, bad weather, or the night, prevents your seeing the Pagodas; when thought near Jagrenat, take care to be in 13 or 14 fathoms. The shore stretching well to the eastward, will make you steer from ENE. to EbN. perhaps E. Upon these courses you will (when past the Pagodas) lose the hard ground, and deepen the water to 16 or 17 fathoms. Then steer NEbE. and NE. this will carry you along in 16 and 17 fathoms, or at most 18 fathoms: without this you ought not to go; and when you are within about a mile of the sand off the False Point, the water will perhaps deepen 1 or 1½ fathom; but continuing a NE. course, will quickly shoal it again to what it was before; or perhaps you will have a fathom or two less, hard sand, which is the sounding off the False Point. From thence continue your course about NEbE. in 15 to 17 fathoms, and that will certainly bring you on the hard brown sand off Point Palmiras, in from 14 to 16 fathoms. When you find this hard brown sand, immediately steer north, &c. as above directed.

If

If by misfortune, or otherwise, you see no land after leaving Madras, or have had no observation or reckoning, that can be depended on, and are sure of being somewhere between Point Palmiras and Ganjam (called Carepave in the *Coasting Pilot*) even then you may go to Ballasore, with the greatest safety, by your lead. Suppose for instance such a ship is, at this season, standing in for the land NW. with thick weather, and a fresh gale from the southward, and in the evening she strikes ground in 25 or 30 fathoms; let her stand on NW. without fear (heaving the lead briskly, and getting all ready for veering) till in 17 or 18 fathoms; then veer round, and steer NEbE. If upon this course the water shoals pretty quickly, let her stand on to 16, 15, 14 and 13 fathoms; this last will be hard sand, and plainly shew the ship to be between Manikpatnam and the Black Pagoda. She must then haul off EbN. and E. till the water deepens to 16 fathoms; whence, steering as above directed, she will find the soundings off False Point, and afterward off Point Palmiras. If steering NEbE. in 16 and 17 fathoms, carries her along in much the same depth, soft ground or mud and sand, she is either between the Black Pagoda and False Point; or between False Point and Point Palmiras: let her therefore continue steering NEbE. and NE. in 15 to 17 fathoms; and she will certainly come to hard sandy soundings from 14 to 16 fathoms. To know whether these soundings are near the True or False Point, let her continue her course; and if it is the False Point, she will carry along much the same depth of water, soft ground, with sometimes mixtures of dark sand and shells, from 9 or 10 leagues, and then come upon the hard sand soundings off Point Palmiras; but upon a NE. course, the water deepens 2 or 3 fathoms, perhaps 4 or 5, upon being past Point Palmiras. If so, she ought instantly to haul up NNW. and NWbN. for Ballasore Road; the water will then shoal very gradually, and she will come into soft ground, with various mixtures of sand, small shells (mostly broken) gravel, and dark-coloured rotten stones, that may be easily crumbled to-pieces.

From this it plainly appears, that sailing along shore, in sight of the high lands and Pagodas, is the most satisfactory, and the shortest way; and that otherwise no ship has reason to \rightarrow , lie-to, or shorten sail to see the Pagodas or Point Palmiras; because with a moderate attention to her course, and depth of water, she may sail safely to Ballasore, without seeing any of them. She need not be directed by the precarious colour of the ground, but by from 4 to 5 fathoms increased depth of water, which no man can well mistake; and it is certainly what all ships will find, after coming upon the hard sand off Point Palmiras, even by steering NE $\frac{1}{2}$ N or NEbN. No matter whether they strike first the hard sand

sand in 14 or 18 fathoms. Nor let any think the depths here mentioned are too near the shore; they are far from it: no mischief can ever happen by keeping in this track; but many ships have suffered by keeping too far off.

Ships that go from Madras to Bengal in September, generally sail with a fair wind, but should sail more easterly than in the preceding months; and the later in this month they leave Madras, the wider range they ought to take to the eastward. For example, admit that Point Palmiras bears NE½N. from Madras, and a ship sails from Madras between the 1st and middle of September: her best way will be (with a fair wind) to shape her course so as to keep Point Palmiras 2 points on her larboard bow, for some days; that is, steer from Madras Road ENE. 193 miles: this will bring the point to bear NEbN then to steer NEbE. 164 miles, and the point will then bear NNE. then steer NE. about 116 miles, and the point will bear about NbE. then steer NEbN. 78 miles, and the point will then bear N. then steer NNE. 50 miles, and the point will bear about NbW. near 100 miles distance; and the nearest part of Orixá will be also 70 or 80 miles off. From this if the wind blows brisk from SW. she ought to steer NbE. and N. till she brings Point Palmiras to bear about WNW. or WbN. she will then have Ballafore Bay open, and perhaps soundings, and so may boldly steer in NW. for the road. But if (when the point bears NbW. 100 miles off) the winds are light and variable, she had better keep on NNE. and NbE. till in about the latitude of Point Palmiras, and then haul up NW. for the road. This range will exceed the direct distance above 40 miles; yet, by avoiding the current along the Coast of Orixá and Golconda, she will greatly shorten the passage. Although some ships, with a strong gale, have run it along shore, at this season, others have failed in the attempt, and, besides prolonging their passage, have suffered great inconveniencies.

The French ship *Union*, from Bassorah, left Madras in September 1738, and was bound to Bengal. With a fresh gale from SW. she steered as is usually done in June, and reached Ballafore Road in 5 days and a half.

Three days after the *Union* failed, (September 5, 1738) the Expedition, captain Sutcliffe (from Bassorah) left Madras, and bound to Bengal. With a fresh gale from SW. she failed as the *Union* did, and got very near Jagrenat Pagoda in 4 days. Here it fell calm, and a strong current running to the SW. captain Sutcliffe who was an experienced seaman) declared, that the fresh SW. winds had deceived him, and that he must, at any rate, get off shore. He was obliged often to ⇨ in deep water, and the wind being faint, chiefly from E. and ESE. his ship was driven almost as far southward as Vizagapatam, before

H h

it

it could be done. Being got off shore at last, she lost the current, and ranged to the NEward, as above directed. She reached Ballasore in 1 month from Madras; so that she was 26 days in getting less than 50 leagues.

The same day that captain Sutcliffe left Madras, the Gamberoon Merchant, captain Riccards, arrived there from Bengal (having worked up along shore, in August, by the help of the current, against the wind; which is commonly called the August passage). She was laden with rice, &c. this she delivered, and instead of ballast took in a load of salt. She sailed again for Bengal, September 17, which was twelve days after the Expedition; and though she had but indifferent winds, by ranging eastward (as above directed) she got into Ballasore Road the same day with the Expedition.

If a ship sails after the middle of September, it is best to keep Point Palmiras about 3 points on the larboard bow, for some time; therefore let her steer from Madras Road, as follows, viz. EbN. about 153 miles, ENE. 141 miles, NEbE. 116 miles, NE. 90 miles, NEbN. 179 miles, and then N. till she has soundings in from 40 to 50 fathoms, which ought to be about 100 miles EbN. or E1N. from Point Palmiras: so much as she is less, she has been set to the westward by the currents.

If she sails about the end of September or earlier, but meets light variable winds, it is proper to take a wider range; and therefore she ought to sail from Madras, as follows, viz. EbN. 153 miles, ENE. 258 miles, NEbE. 187 miles, NNE. 204 miles; and then N. till she get soundings in about 40 to 50 fathoms, which ought to be about 180 miles EbN. or ENE. from Point Palmiras; but ships generally find themselves to the westward of this account: she must then coast along westward to Ballasore. See the directions for next month.

By these ranges it is not intended to give each exact course and distance that a ship ought to make (the variable winds render exactness impracticable) but only to point out the best tracts, by following of which (if the winds permit) she will commonly make a speedier passage than by any other method. Late ships meet frequently with light variable winds, and ought rather to range more easterly than is here prescribed. On the contrary, ships being got near the latitude of Point Palmiras, with brisk southerly winds, instead of steering N. had better haul up NNW. NW. and WNW. as they bring the point to the southward of W.

Many ships bound to Bengal, from Madras and other neighbouring places, in September, thinking they are far enough to the eastward, fall in with the Coast of Oriza: this arises from their going too far northward before they get sufficient easting;

eastward: thereby they meet with light variable winds and westerly currents. Let such strike off shore immediately, until they get into the track above mentioned, and follow it. The reason of this will appear from the following instances.

The Heathcote Indiaman, and Fanny country ship, bound to Bengal, sailed in company from Madras, September 13, 1740; but not keeping enough to the eastward, they fell in with the land off Pondy or Barva. The Heathcote immediately put off shore, and by taking a range eastward, got to Bengal about October 13; but the Fanny, attempting to get her passage along the coast, met nothing but light winds, calms, and strong currents to the SW. till November. Then the monsoon began with a fresh gale from NNE. and NE. with which she was glad, at last, to croud under her courses, and take a range eastward; by this means she reached Bengal late in December, after being obliged to kill 6 or 8 Arab horses, for want of water.

Six days after the Heathcote and Fanny left Madras, September 19, 1740, the William and Mary now sailed from Madras for Bengal; and by sailing eastward (as above directed) got to Calcutta in 25 days. It appeared afterward, by comparing journals, that at the time the Fanny was becalmed, in shore, between the latitudes 18° and 19° N. the snow in the same latitude had a brisk gale at WSW. This wind gradually decreased till she got into the latitude of 21° N. where she had soundings 70 fathoms, and was above 50 leagues eastward of Ballasore. As the breezes were very faint, she was desirous of getting into \rightarrow ing ground, and for that purpose steered right in shore North; then it fell calm, and continued so for a week, during which time she drove with the tide and current up to Ballasore Road.

To understand how that was done, it must be observed, that from Ballasore, as far as 60 or 70 leagues eastward, and as high up the River Hughley as Ingellee, the first part of the ebb tide runs E. then ESE. SE. and SSE. S. SSW. SW. and WSW. then the ebb is done; and the flood tide begins to run on the opposite points, viz. W. WNW. NW. NNW. N. NNE. NE. and ENE. the flood is then done, and the ebb begins again to run east; but at this season of the year, the freshes from the river cause much stronger ebb tides or currents to the WSW. and SW. than the flood tide in the opposite points. The ebb tide, for the same reason, runs much longer.

The snow, therefore, usually continued to \rightarrow in 9 or 10 fathoms water, when the flood tide began to set to the eastward of north: she lay at \rightarrow during the last part of the flood, and first of the ebb tide, but got under weigh as soon

as the ebb tide got to the westward of south, and drove out SSW. SW. and WSW. so that when the flood began to set W. she was perhaps in from 20 to 23 fathoms, and from thence continued driving WNW. NW. NNW. and N. till in 8, 9, or 10 fathoms, where she again ϕ -ed.

A ship that sails in October, ought to take a wider range than in September. Let such, therefore, if the winds permit, steer from Madras Road E. $2^{\circ}\frac{1}{2}$, EbN. 3° , ENE. $3^{\circ}\frac{1}{2}$, NEbE. 3° , and then NE. till they see the Coast of Arrakan. But the SW. monsoon is now almost done, and that from the NE. commences, and the winds will seldom or never permit such a track to be followed; therefore she ought to be careful not to go within it, except when, near the Arrakan Coast, she has strong SW. winds; then her business will be to avoid that shore, and steer NNE. N. and NNW. till in soundings, and then along the shore to Ballasore Road. If she has light variable winds, she ought to take a wider range than is prescribed; particularly with NE. winds she ought not (till far eastward) to steer to the NNW. for that will certainly lose her passage: but rather she ought to steer EbS. ESE. and SEbE. by this perhaps she may lose 1° 2° or 3° of Latitude; but then she will get easting, which is chiefly wanted; for when she has got well to the eastward, she is always sure of winds to carry her N. NbW. and NNW.

Some people judge it absolutely necessary to see the Coast of Arrakan; but it is not: late ships had better see it; because that, in some measure, secures the passage. The following examples are for 1748; because during the months of October and November, that year, there were less NW. and more steady NE. winds, than had been known for many years.

The Bombay-Castle Indiaman, captain Brown, bound to Bengal, left Pondicherry Road, October 2, 1748, and with light breezes from SE. to SW. and WSW. was, the 6th at noon, in latitude $13^{\circ} 6'N$. meridian distance $3^{\circ} 31'E$. The 4 next days she had light variable winds and much calms, so that, the 10th at noon, her latitude observed was $13^{\circ} 14'N$. meridian distance $4^{\circ} 49'E$. Here moderate and other faint northerly winds began, and continued between the N. and E. with scarce any intermission all the passage. With these winds she stood close hauled, commonly ESE. and EbN. and sometimes tacked and stood NbE. to NNW. to the 24th, at noon, when her latitude observed was $12^{\circ} 54'N$. meridian distance from Pondicherry $13^{\circ} 32'E$. Half an hour afterward she saw the Great Andamans from SE $\frac{1}{2}$ E. to ENE $\frac{1}{2}$ E. 10 or 12 leagues off. At sunset they were 4 leagues off shore, in 46 fathoms, fine sandy ground. Sent their boat in shore to sound, and found even soundings to within a mile of the shore, where

where were 20 fathoms. She continued working to the NNW. and eastward, as the wind permitted; and October 29, at sun-set, the north end of the Andamans bore from SWbS. to SSE $\frac{1}{2}$ E. distance about 5 leagues.

The Fanny, captain Rannie, sailed from Cuddalore to Bengal, Oct. 5, 1748, and with winds from the NE. quarter, steered, close hauled, between EbN. and NEbE. till she has made, by her reckoning, 11 $^{\circ}$ meridian distance E. and was in latitude 9 $^{\circ}$ N. She then tacked and stood between NbE and NbW. (as the wind would permit) till in latitude 18 $^{\circ}$ N. and meridian distance 10 $^{\circ}$ E. That day she was, by observation, 20 miles southward of account, which caused a suspicion of drawing too near the Coast of Orixá. She tacked, and stood over between EbN. and SEbE. till she made her meridian distance 16 $^{\circ}$ 30'E. and was, by observation, in latitude 17 $^{\circ}$ N. Several appearances of small birds, &c. made them judge the Arrakan shore to be near; but they did not see it. The wind coming to EbN. she tacked and stood, close hauled, NbE. to NNW. this carried her to Ballasore, having just weathered Point Palmiras in 18 fathoms water; and made 13 $^{\circ}$ meridian distance from Cuddalore, during a passage of six weeks.

The day after the Fanny left Cuddalore (October 6, 1748) the Lapwing Indiaman and Success galley (both bound to Bengal) sailed from Pondicherry, and with the same wind as the Fanny had, from the NE. quarter. They stood, close hauled, between EbN. and SEbE. till they were to the eastward of the Nicobar Islands, and then tacked and stood northward; passed the Cocos, coasted the Arrakan Coast, took in some water at the Island of Cudeba or Cubeb, and crossed over to Ballasore, which they reached, after a passage of 6 weeks.

This was the route taken by the Lapwing Indiaman and Success galley; but as they sailed much faster than the Fanny (and perhaps better than most ships in the world) it is probable they would have got their passage 8 or ten days sooner, if they had followed the route taken by the Fanny; for she sufficiently avoided the current that runs along the Coast of Orixá, without taking so wide a range; however, the range taken by the Success and Lapwing makes the passage the more secure.

CCXVI. *Of Voyages from the CHINA SEAS and other Eastern Parts to BENGAL.*

Ships coming from China to Bengal in December, by keeping close to Junkfeilon Head, and from thence standing northward, close hauled, commonly weather the Andaman, and sometimes the Cocos Islands; but they never make it their business to see either Cape Negrais or the Coast of Arrakan.
They

They afterward stand on toward the bottom of the bay; but when the wind comes too far northward, they tack and run to the eastward: and when it veers eastward, they steer again to the northward.

The channel eastward of the Andaman Isles is fair and good: nor is there any thing under water to hurt a ship, except they go very near the shore. Narcondam is an high steep island, which may be seen 14 leagues off, and hath deep water all round it. The small island laid down to the southward of Narcondam, in the English Pilot book, and about EbN. from the Nicobars, doth not exist. Monday, by some called High Island, near the Great Andaman, is very high, and has no ground at 100 fathoms, 2 leagues off it. The north end of the Andamans is a fair pretty high shore, and good soundings along it. Captain Barton, one voyage, just weathered the NE. point of it, in 8 fathoms; but that was too near, for he was not $\frac{1}{2}$ a mile from the strand. The Cocos Islands are pretty high, and have many trees; but the Preparis are lower, and more barren. There are regular soundings round these clusters of islands. The channel between the Andamans and Cocos, also that between the Cocos and Preparis, is very fair and good; the water also is deep.

Many ships, after reaching the Coast of Arrakan, have been much at a loss in crossing over to Ballasore, some having judged themselves at the Braces, when they were scarcely half way: some, too much afraid of the sands, have run past Point Palmiras; while others, too little afraid of them, or not considering how the Coast lies, have got suddenly into the shoal water: others again have been obliged to ride a hard gale at $\frac{1}{2}$, in the open sea; and some have lost a month in working up this coast, when they had no occasion to lose an hour.

The Hester Indiaman sailed from Bencoolen September 4, 1705, bound to Bengal. She worked along the Arrakan Coast, and had the last sight of it October 6, being pretty high land, bearing NE. about 10 leagues off: her latitude, by account, $20^{\circ} 40' N$. Twelve days afterward, getting suddenly from 6 to 5 fathoms, they thought themselves at the foot of the Braces, and and $\frac{1}{2}$ ed in 5 fathoms ouze and sand; latitude observed, $21^{\circ} 21' N$. meridian distance from the Arrakan Coast $3^{\circ} 25' W$. at the same time, saw land from N. to NW. about 6 leagues off. From thence the gunner was sent ashore in the pinnace, to enquire where they were; he returned the 20th, with an account that all was low drowned land, destitute of inhabitants. At the same time they met a company's sloop going to Chittigong, who told them
their

their error, and that they were 100 miles eastward of Sagor Isle. They then made the best of their way to the westward, and reached Ballasore October 24, having made $5^{\circ} 30'$ meridian distance, (including allowance for currents, according to their best judgment) from the Arrakan Coast to $6\frac{1}{2}$ fathoms, in sight of the Bankshall house at Ballasore. Before they saw the sloop, they lost soundings sometimes. Soon after, by steering too northerly, they got into shoal water; she also rid at $\frac{1}{2}$ in 18 fathoms water, a whole night and morning, in a hard gale of wind, in latitude $21^{\circ} 12'N$.

Captain Glen, in a country ship, by keeping in from 22° to 24° (from Sagor Isle) past Point Palmiras, and got into shoal water near False Point, from whence she was 8 days in working round into Ballasore Road. The Bombay Castle Indiaman, already mentioned, would have done the same; for without the Point, in 23 fathoms, she was steering WNW. with the wind at NE. and NEbN. but luckily in the morning saw a country ship close hauled; she did the same, and upon a NWbN. and NNW $\frac{1}{2}$ W. course just weathered Point Palmiras, in 17 fathoms water.

November 17, 1759, the Prince George Indiaman, bound to Bengal. was, January 8, at noon, in latitude $21^{\circ} 12'N$. per observation, $1^{\circ} 57'W$. meridian distance from the Broken Islands of Arrakan, depth 20 fathoms. From this point with the wind at NE. she run (the 9th) 35 miles WNW. and had very even soundings, gradually shoaling to 12 fathoms, by 10 PM. The next hour, she steered the same course 4 miles, and deepening her water quick to 15, 17, 23 fathoms, at 11 PM. hauled up NW. but in $\frac{1}{4}$ an hour (running $1\frac{1}{4}$ mile) had from 35 to 40 fathoms, then no ground at 90 fathoms; upon which they wore to the eastward, but immediately having ground again 100 fathoms, wore and stood WbN. to WbS. 8 miles, and had soundings from 100 fathoms, to 50, 24, 18, 10, and 5 fathoms, stiff clay: wore again and steered SE $\frac{1}{4}$ S. then had from 5 to 25, and presently no ground. They continued this course $1\frac{1}{4}$ hour, when they hauled gradually round to S. SSW. and WSW. then struck ground 45 fathoms, at 11 AM. The next hour she run 4 miles WbN. and had 36 fathoms, latitude observed $21^{\circ} 5'N$. meridian distance, $3^{\circ} 2'W$. from Arrakan Islands. Having a fresh gale at NE. she run next day W. 28 miles, and was then in 15 fathoms. At 8 PM. steered WbN. $7\frac{1}{2}$ miles; depth $14\frac{1}{2}$ 13, 15. At 9 PM. steered then WNW. 16 miles, 15 to 16 fathoms; but by lying-to, to speak to a sloop, she deepened to 22 fathoms. Hauled up NWbW. $3\frac{1}{2}$ miles, and had the same depths; therefore hauled NW. 2 miles, and had 50 fathoms; then NWbN. 5 miles, and had 17

16, 14 fathoms. Edged away NW. 5 miles, and had 14, 13 $\frac{1}{2}$, 12, 12 fathoms; then NWbW. 5 miles, and had soundings, $\frac{1}{2}$ 11, 11, $\frac{1}{2}$ 10, and 10 fathoms. It was then 8 AM. and she saw the pilot floops bearing SWbS.

In the foregoing accounts, the days of the month are according to the Julian account, or Old Style, which is 11 days later than New Style, and what was then used.

Mr. Nichelson's Account of a Passage from Madras, to and from the Island Diego Rayes, or Rodrigues, in the South-West Monsoon.

CCXVII. *Of the Passage from MADRAS to the ISLAND RODRIGUES.*

This island is called by some, Diego Rayes, by others Diego Roiz, and by others Rodrigues. It is situated about 16° of longitude eastward of the middle of Madagascar, and should be distinguished from a small island near the equinoctial, whose longitude is 6° more eastward, and which is properly named Diego Rayes.

The Elizabeth sailed from Madras, in company with his Majesty's Squadron under the command of Commodore Tiddeman, on the 4th of August, 1761. We continued working along shore to the southward, taking all advantages of the sea and land winds, and found little or no current, either for or against us.

On the 10th, being off Trankabar, the Commodore was persuaded to put off the coast; accordingly did so, and on the 11th found we had a strong northerly current against us: by observation we were 25 miles to the northward of account, and the next day 28 miles; tried the current, and found it set 1 knot 2 fathoms, NbE. and had the winds from SE. to SW.

These strong northerly currents obliged us to stand in again for the coast, and determined us to abide by our first plan of operation, which was, to keep along the coast as far as Negapatnam, and from thence stretch over for Zeloan, to water at Trinkamalay; then coast it along that island as far as the Friar's-Hood, and from thence take our departure for Diego Roiz, or Rodrigues.

The 13th and 14th, the current set us each day 22 miles to the northward. On the 14th, at 10 PM. saw the land, Calderoon Wood bearing west. From thence we worked along shore, and ~~4~~ed occasionally, having the current only from 3 to 5 fathoms to the northward. The 15th, at noon, were off Negapatnam, and took our departure from it, for Trinkamalay. From the day we left Trankabar, and stood off the coast to the time we fell in with Calderoon Wood

Wood, was 4 days; and from the time we made Calderoon Wood, to the time we \ddagger ed in the Back Bay, was 4 days: which shews, that, if we had kept in shore, we should have been at Trinkamalay at the time we fell in with Calderoon; which was 4 days lost.

On the 16th, found no current; and on the 17th, at noon, the flag-staff point at Trinkamalay bore WSW. about 5 leagues: here we had strong WSW. winds, and were set 24 miles to the southward of account. The 18th, at midnight, \ddagger ed in Back Bay, Trinkamalay. The 20th, having completed our watering, at midnight weighed from thence, with strong WSW. winds.

We coasted it along Zeloan by help of the sea and land breezes from SE. to SW. and W. and found little or no current; and the 22d, in the evening, took our departure from the Friar's Hood.

In our passage from Zeloan to the equinoctial line, we had fresh steady gales from WSW. to SW. from the equinoctial line to latitude $3^{\circ} 45'$ S. had little winds, variable, and intermixed with calms; from thence, had the winds in the SE. quarter, generally from ESE. to E. soon increasing to fresh gales, which continued all the way to Rodrigues, off which island we arrived, the 15th of September.

CCXVIII. A Description of the Island RODRIGUES.

Rodrigues is an island situated in latitude $19^{\circ} 40'$ S. and longitude $63^{\circ} 15'$ E. from London. The longitude we made, from the east coast of Zeloan, in the parallel of the Friar's Hood, home to Rodrigues, was $21^{\circ} 40'$ W. so that, allowing that part of Zeloan in $82^{\circ} 2'$ E. from London, it will make Rodrigues to lie only in $60^{\circ} 22'$ E. from London. The variation, about 10 or 12 leagues to the eastward of this island, was then $9^{\circ} 15'$; about 3 miles off the east end of it, $15^{\circ} 52'$; in the road or harbour, $9^{\circ} 41'$; and 8 or 9 leagues to the westward of the island, $12^{\circ} 10'$ westerly.

This island is very high and mountainous, and from all appearances looks as if it had been shaped by an earthquake, there being scarcely 50 yards of level land upon the whole island; and it is every where covered with trees, shrubs, &c. It is about 15 or 16 miles long, and 6 broad, environed with reefs of rocks and shoals, in some places 3, 4, 5, or 6 miles, more or less, from the shore, except the NE. part of the island, which is bold to; having, within $\frac{1}{2}$ a mile of the shore, 16, 18, and 20 fathoms. From this depth as you stand to the northward, you will have 25, 30, 40, and 45 fathoms, 3 miles

off shore; and without that, no soundings: farther to the westward the soundings are more gradual.

Near the middle of the island there is a remarkable high peak, which is a good mark for the road or harbour: when this peak bears south, you are a-breast of the road; when it bears from S^W. to S^{SE}. you may stand in shore to 16 or 18 fathoms, gradual soundings. The bottom in general is coral rocks though you may find some few spots, sand and mud. There is no such thing as \rightarrow ing without the road with safety. You may stand off shore with the above bearings, the water deepening gradually to 30, 40, and 45 fathoms, in some places, more or less, and then no soundings, 3 or 4 miles off shore.

During the 7 weeks we cruized off this island, I have observed, for several days together, the current run so strong to the westward, that it was with great difficulty we could keep our station, with a constant press of sail on the ship, and often found that we lost ground for several days together. At other times I have observed the current run as strong to the eastward; and when it has blown such a gale of wind, as to put us under close reefed top-sails, we have got ground, or at least held our own for several days together. In moderate weather, while lying to for 8, 10, or 12 hours together, the current has kept us up, so that we have held our own. The current ran strongest at the full and change of the moon.

The winds blow constantly between the E. and the SE. sometimes very strong gales, with showers of rain; and most frequently fresh gales, with fair, cloudy, or hazy weather; sometimes the weather is moderate, fair, and clear, and the sea extremely smooth for several days together. It is sometimes calm, but very seldom.

There is a good road or harbour on the north-east side of this island, right under the peak. This is called Mathewren Bay. There is a small spot of level land between 2 hills, with a level sandy beach, that extends along shore for about $\frac{1}{2}$ a mile, and seems to form a small kind of bay, in the middle of which stand 2 or 3 small wooden houses: one, larger than the rest, was the habitation of a French governor, as we called him; he was a lieutenant in the French East-India Company's service, and had his family there, a surgeon, and several slaves, in order to get a quantity of sea and land turtle in readiness to send to Mauritius when the vessels arrived from thence, which are constantly employed on that service.

This road or harbour is very safe when you are in; you may \rightarrow in 12, 13, or 14 fathoms sand and mud, clear and good holding ground, about $\frac{1}{2}$ a mile

mile from a reef, in shore from you, about $\frac{1}{2}$ of a mile from the shore, which is very shallow; whereby the landing at low water is very bad. Our whole squadron went in and ~~4~~ed in this Road (Mathewren Bay) through the eastern channel, though it is very difficult of access; therefore I can give no proper directions for sailing into this road through it.

We were obliged, after a great deal of trouble in sounding to find out this channel, to buoy and beacon it off in a very particular manner; the soundings being very irregular, one cast 10 or 12, the next 5, 4, 3, or 2 $\frac{1}{2}$ fathoms; the bottom all sharp coral rocks like pyramids. I have been with a boat on the top of one of these pyramids in a calm, when, the water being very clear, I could see it very plain, and had 3 $\frac{1}{2}$ fathoms at the boat's bow, and 13 or 14 fathoms at the stern; the top of this rock was not bigger than a ship's mizen-top.

Notwithstanding the intricacy of this channel leading into the road, some ships have blundered into and out of this place; and though some of them have struck pretty hard upon these rocks, have escaped without being lost.

A small ship, that draws no more than 12 or 13 feet water, may run into this road over all, by keeping the peak SbW $\frac{1}{2}$ W. or SbW $\frac{1}{4}$ W. and the governor's house, if standing, SSW $\frac{1}{2}$ W or SSW $\frac{1}{4}$ W. With these marks such a ship may run in clear of all danger, but will have irregular soundings.

Whilst the squadron lay at Rodrigues, great pains was taken to sound and survey this harbour. We discovered a very fine, open, and clear passage to the westward, which we call the Leeward or Western Channel, never before known. Ships used to go out the way they came in: this was more difficult and dangerous than going in; for they ran athwart the dangerous shoal of rocks called the Middle Ground, several places thereof being so shoal that the sea breaks on it in a fresh gale of wind. In some places you may have 3 fathoms, at others 2 $\frac{1}{2}$, 2, and 1 $\frac{1}{2}$ fathom: these are all different shoals, with 6, 7, or 8 fathoms water between them.

I should look upon it next to a miracle for a great ship to go out clear of all these shoals (as they always go out with a scant wind) although some ships have been lucky enough to do it.

The marks to go out of the road or harbour, through the Leeward or Western Channel, are, to run so far to the westward as to bring the peak about a sail's breadth to the eastward of the governor's house. Keep the peak so, or a little more open to the eastward of the governor's house; and that will lead you out in a safe and clear channel. Your course out will be about N, by W. and the peak will bear about S $\frac{1}{2}$ E. You will have 17, 18, 16, 13, 12, and

no less than 11 fathoms; and when the east point of the island is open with the east point of the bay, you are in 18 fathoms, clear of all the shoal; and may steer away as you please.

There are gradual soundings off the NW. part of the reef; and off Booby Island it shoalens gradually from 30 fathoms, 2 or 3 miles off, to 7 or 8 fathoms within a cable's length of the reef.

You may \rightarrow in the harbour in 11, 12, or 13 fathoms, the peak bearing S $\frac{1}{2}$ W. or S $\frac{1}{4}$ W. the east point of the bay, which is the easternmost land in sight, EbS $\frac{1}{2}$ S. Booby Island W $\frac{1}{2}$ N. and Diamond Island WSW $\frac{1}{2}$ S. when it is in one with two little hillocks near the west part of the island. For a better explanation of this road or harbour, I refer you to my draught of the north side of this island, shewing its dangerous reef, the middle ground, and other dangers.

This island is subject to storms and hurricanes, and has the same seasons they have at Mauritius and Malchareen, or, as the French name them, the Islands of France and Bourbon. Their stormy months are January, February, and March; then the hurricanes are sometimes very violent.

In the harbour of Rodrigues or Mathewren Bay, there is a regular tide; the flood to the eastward, and the ebb to the westward, at the rate of 2 knots an hour. It flows N $\frac{1}{2}$ E. or $\frac{1}{2}$ of an hour; being high water at $\frac{1}{2}$ past 12 o'clock, on the full and change of the moon; then also it rises perpendicularly about 6 feet.

Plenty of water may be got here; near the governor's house is a running stream of good water. There are several other good watering-places in this bay, and all good water. There is also plenty of fire-wood for cutting. In October and November, 1761, all our squadron wooded and watered here with great ease.

Here is abundance of several sorts of fish; those caught with hook and line in deep water, are reckoned unwholsome and of a poisonous nature; those got in a seine, or net, in-shore, are exceeding good and wholesome.

Here is great plenty of sea and land turtle, particularly the latter: we victualled our sick people entirely upon them, and served the ships companies several days in a week with them. Here are manatees, which are good and wholsome food; but herbs and vegetables are very scarce, no part of the island being cultivated, except a small garden of the governor's.

The soil is rich and fertile, and would produce any thing sown or planted in it. Many things grow here spontaneously, such as limes, oranges, figs, long-pepper,

pepper, and several other things; but none of them were in season when we were there. The air of this island is healthy, and of a fine temperature: our sick people that were sent on shore recovered very fast, particularly those who had the scurvy.

CCXIX. Return from RODRIGUES to MADRAS.

On the 1st of December, 1761, we sailed for India, with all the Squadron in company. From the Island Rodrigues to latitude 27° S. we made longitude from thence $7^{\circ} 36'$ E. found the variation $12^{\circ} 34'$ W. and had the wind from ESE. to NE. but mostly in the NE. quarter; and sometimes to the westward of north. In the above latitude, we found the winds variable, with squalls and rain; this kind of weather continued to latitude $23^{\circ} 20'$ S. the winds variable, but mostly between NW and SW. The longitude made to the last-mentioned latitude $11^{\circ} 8'$ E. from Rodrigues, and there found the variation $7^{\circ} 41'$ W. Then we had the SE. trade from E. to SEbS. this continued to latitude $10^{\circ} 4'$ S. and longitude made from Rodrigues, $18^{\circ} 39'$ E. there the variation was $26'$ W. From thence to latitude 1° N. and longitude, from Rodrigues, 28° E. the variation was $54'$ E. Fresh gales, and cloudy squally weather, with much rain; the winds veering from E. to SE. S. SSW. and WSW. and from that to WNW. and NW. and back to SW. again. From latitude 1° N. to $5^{\circ} 42'$ N. near the same meridian, and the variation $48'$ E. had little winds, variable; though mostly from SW. to NW. and N. and sometimes calm. Then had the NE. monsoon, or steady moderate gales, from NNE. to ENE. this continued all the way to Pullicat and Madras, with fine, clear, pleasant weather, and smooth water. We arrived at Madras, the 26th of January, 1762, and made $18^{\circ} 5'$ E. longitude to Pullicat.

CCXX. Of a Passage from MADRAS to TRINKAMALAY in the ISLAND CEYLON, in order to shun the PETTY MONSOON.

We sailed from Madras the 9th of April, 1762, and had mostly little winds and fair weather, with some smooth water; the winds chiefly from ESE. to S. SSW. and sometimes SW. Sometimes we had the winds in the NE. quarter, and then the breezes were fresher and steadier than in any other.

We had various kinds of currents, setting sometimes strong to the northward, at others as strong to the southward, and for several days together were sensible of no current at all. Though the currents are thus variable in the Bay of Bengal, and they change with every shift of wind of any strength or continuance;

continuance ; yet it may be depended on for certain, that the nearer the coast, the stronger the current. For instance, the 1st day we left Madras, the current set the ship 62 miles to the northward ; the next day only 8 miles ; and the 3d we found no current at all. The day before we made Ceylon, the ship's run and the observation agreed exactly ; we made Ceylon at 6 A. M. and at noon found the ship 35 miles to the northward of our reckoning. When we got in shore, and ~~4~~ed, we found the current sometimes run at the rate of 2 knots ; which proves, that the nearer the land, the stronger the current. Notwithstanding the different currents we met with on our passage from Madras to Ceylon, we found our reckoning pretty just at our making the land.

All along the Coast of Coromandel, the variation (what little there was) was westerly. This variation continued for $1\frac{1}{2}$ or 2° of longitude east from the coast, and then it changed to east variation ; you might depend upon it, if coming in with the Coromandel Coast, you changed your variation from E. to W. you were then not more than 30 or 40 leagues from the coast.

In April, and to the middle of May, the winds near the NE. part of Ceylon are mostly from SE. to S. in the day time, and south-westerly in the night. These southerly winds occasion a very strong northerly current at this time of the year. I would recommend it to all ships, bound to Trinkamalay at this season, to make the land in latitude 8° N. which is $\frac{1}{4}$ a degree to the southward of Trinkamalay ; this will save much time and trouble. We fell in to the northward : there we met with southerly winds and northerly currents, and were forced to work up in shore, ~~4~~ing, &c. Hereby we lost 7 days, not getting into Trinkamalay till the 8th of May, whereas we might as well have got in the day we made the land, which was the 1st of May. Let this serve as a caution to those that come this way hereafter. Remember, that is better to fall in 20 leagues to the southward, than 2 leagues to the northward.

We lay in Trinkamalay Harbour from the 8th of May to the 5th of July, in which time I finished my survey of Trinkamalay Bay and Harbour.

From the 8th to the 14th of May, had regular land and sea breezes, with hot sultry weather ; the sea breeze at SE. and the land winds from SW. to WbS. From the 14th had no more sea breezes ; but the land winds blew constantly from SWbW. to SWbS. fresh gales, and clear weather : they were sometimes moderate, but very seldom, and then of short continuance. These land winds blow so strong sometimes, that they may justly be called gales of wind,

wind, particularly in the opening of the great bay; there they sometimes blow excessive hard.

We failed from Trinkamalay for Madras, the 5th of July. In the evening of the 8th of July, being off Calderoon Wood, we were taken a-back with a very hard squall of wind and rain, with much thunder and lightening, from the NE. quarter; which obliged us to lie-to under fore-sail and mizen; then had strong gales, and variable all round the compass, with much rain, thunder and lightning, so as several times to be taken a-back. This weather continued till midnight, when it moderated; but we had then fresh gales from SSW. with a constant heavy rain, till 4 A. M. Next day ~~4~~ed in Madras Road.

CCXXI. *The METHOD of making a Passage from TRINKAMALAY to MADRAS, or any other Part of the COAST of COROMANDEL, in the NORTH-EAST MONSOON.*

Our squadron (when at Trinkamalay in the north-east monsoon, and bound to the Coast of Coromandel) always stretched off from Trinkamalay to the eastward; a small distance, more or less, as the wind hung to the northward or eastward; always taking the advantage of the winds veering to the eastward, to stand to the northward, and when the wind veered to the northward, to stand to the eastward.

In the offing, the winds hang pretty much to the eastward; and if a degree or two of easting from Trinkamalay, you will be able to fetch any part of the coast you may be bound to. Several of our ships have made a passage from Trinkamalay to Pondicherry, in 9 or 10 days, and to Madras in 12 or 13 days, even in December, which is the height of the north-east monsoon; taking care to fall in to the northward of their port in this monsoon.

CCXXII. *A DESCRIPTION of TRINKAMALAY BAY, the Harbour of BACK BAY, &c.*

Having never met with a description of Trinkamalay Bay, in any of our sea books or charts, nor seen any good draughts of the harbour or bay, I shall therefore be as particular in my description of it as I can.

Trinkamalay is, perhaps, one of the finest harbours in the known world, being very large and safe. It is entirely surrounded by the land; you lie there secured from all winds that can blow; the bottom is clear, and good holding ground; and it is spacious enough to contain 1000 sail of ships: there are many good and convenient coves for careening ships, &c.

There

There are several watering-places which are particularly distinguished in my draught of this bay. The ships that water in Back Bay usually fill it in the fort; and those which do not, must fill at the well in the town, where they will have $\frac{1}{2}$ of a mile to roll their casks. The watering-places are commanded by the forts in Back Bay; and those in the harbour by the forts at the mouth of the harbour. As for wood, it is to be had every where in plenty.

Fresh provisions for present use, and refreshments, may be got here; but in small quantities, not more than sufficient to supply two men of war. The only species of fresh provisions to be had here, are beef, buffalo, hogs, and a few fowls; little or no vegetables; and what you do get is very dear. As for sea provisions, there are none of any kind to be had.

Although the situation of this port, and its commodiousness, make it a convenient place for trade, little or none is carried on here. Here are no ships belonging to the place, only country boats and small vessels. The Dutch European ships call here about the month of July or August, transact their business, and depart again before the north-east monsoon sets in. They generally lie in Back Bay.

The latitude of Flag-staff Point, by several observations, is $8^{\circ} 32' N.$ the longitude, by astronomical observation, is $81^{\circ} 40' E.$ from London; and the variation was $45'$ easterly, 1760. It flows here, on the full and change, E. and W. or at 6 hours; and it flows perpendicularly 3 feet. The tide has little motion but on the south side the bay: there it runs, at spring tides, the ebb $1\frac{1}{2}$ knot to the eastward, and the flood a knot to the westward; the flood 4 hours, and the ebb 8 hours.

The land round Trinkamalay is very remarkable, it being high land all round the harbour, and no other high land near it, either to the northward or southward. To the southward of the high land, near the harbour, is the great Bay of Trinkamalay, which is 6 or 7 miles north and south, and 7 or 8 miles east and west. This bay is very deep and large, having no soundings but on the southern shore, which is all low land, and on which there are 4 rivers; but none of them navigable for any thing but small boats.

The Flag-staff Point is still more remarkable; it being very high, steep, and covered with trees. It is narrow, and stretches out into the sea about $\frac{1}{2}$ of a mile; there it terminates in a point, which breaks off suddenly from its full height, perpendicularly down to the sea, with a rock about the height of a ship's hull, in the sea, close to the point. On the top of this point the Dutch have a look-out house, whereon they hoist their flag when any ships are

are in sight in the offing : by this Trinkamalay may be known a great way at sea. The high steep point, and the Dutch flag on it, make it very conspicuous. This point makes the same, coming either from the northward or the southward. There is also on the middle of the flag-staff point of land, a very large remarkable tree, which, when in one with Chapel-Point, is a mark for clearing the shoal south-west of Norway Island.

To the northward of Flag-staff Point, between it and Elizabeth's Point, there is a spacious and safe bay, called Back Bay, being a fine large round bay, with a smooth sandy beach, and good landing any where. In the SW. monsoon, it is very safe and smooth lying in this bay, which has a clear sandy bottom, with gradual soundings toward the shore. You may \rightarrow any where in this bay from 7 to 12 or 15 fathoms, from $\frac{1}{4}$ of a mile to $\frac{1}{2}$ mile off shore; the Flag-Staff point bearing from SEbS. to SbE. Here is plenty of water and wood. Ships that water in this bay fill it in the fort, where there are several wells with abundance of water. The proper landing-place is at the fort, where the Dutch have built a wooden pier for the conveniency of landing.

CCXXIII. DIRECTIONS for a Ship coming from the Southward, bound into TRINQUEMALE or TRINKAMALAY HARBOUR.

The first danger to be guarded against, going into Trinkamalay Bay, from the southward, is Foul Point, which may be avoided by keeping in 14, 15, or 16 fathoms; and when Round Island is a sail's breadth open to the southward of Marble Point, you are clear of that danger. Marble Point will then bear WbS;S. Thus you clear the reef off Foul Point.

With the above marks you may run up the bay till you open the harbour's mouth; but you have no soundings as you run up the bay, after you are to the westward of Norway Island. Thus you may steer up the bay.

The course into the harbour is NWbN. keeping mid-way between Round Island and Elephant Island, where you still have no soundings. Thus you may enter the harbour.

Come not near the west point of Elephant Island; for, about a cable's length NWbW. therefrom, lie dangerous rocks, with only 6 feet water on them; to go clear of which, keep the White House, that stands on the top of Osnaburgh Point, 2 sails breadth open with Elephant Fort Point. Thus you may avoid the Elephant Shoal.

The harbour's mouth is very narrow, being not more than 2 cables length over, and 30 fathoms water in the middle; each point steep to, so that you may

go within a ship's length of either : therefore you may run boldly in, there being no danger but what may be seen.

After you have got through the narrow entrance, you will come into a fine spacious harbour, where ships lie sheltered from all winds that blow ; the bottom clear, and good holding ground. In the middle of the harbour lies a dangerous shoal of rocks, on which there are not above 5 feet water, called York Shoal : this you will avoid by keeping Round Island a sail's breadth open with Osna-burgh Point, till you bring the flag-staff on Flag-staff Point, upon the gap of the wood, at the town ; then you are clear of it, and may run up toward the town, and \rightarrow where you please, or in what depth you please from 17 to 8 fathoms. Thus you may avoid the York shoal. Here are many convenient coves and place for ships to lie in, or careen, heave down, &c. as may be seen more particularly in Mr. Nichelson's draught of this place.

CCXXIV. DIRECTIONS for Ships coming from the Northward, and bound into TRINKAMALAY HARBOUR.

You may pass by Pigeon Island within a mile, a mile and an half, or 2 miles of it, in 21, 22, or 24 fathoms. Pigeon Island is a cluster of rocks, both above and under water, the outermost of which is the largest and highest, and has several green trees and shrubs on it : between it and the main there is no passage, it being all foul ground, with rocks above and under water. I have sounded about the outer part of this island, and had 22 fathoms, a mile and a half without it ; sounded toward the island, and had 21, 20, 19, 17, and 16 fathoms, soft ground, within half a mile of it.

Pigeon Island bears from the Flag-staff Point, in Trinkamalay, NbW $\frac{1}{2}$ W. 12 or 13 miles. Off Pigeon Island, when you have 36 or 38 fathoms, you are just at the edge of the bank, and the next cast may be 40 or 42 fathom, or perhaps no ground. If it proves calm, or the current is against you, take care to \rightarrow , rather than be set off the bank. Thus you may avoid Pigeon Island.

From Pigeon Island you may coast it along as far as Elizabeth's Point in 20 or 18 fathoms, though the soundings are a little irregular between them. Elizabeth's Point is the north point of Back Bay, near Trinkamalay. Off this Point lie 2 rocks above water, about the bigness of a boat : they are about $\frac{1}{4}$ of a mile from the shore ; from them to seaward runs out a reef of rocks under water, for $\frac{2}{3}$ of a mile, having 7 or 8 fathoms water close to them, and much about the same water close to the rocks, both to the northward and southward of them. Come no nearer than in 12 or 13 fathoms ; nor, to the shore to the northward of them, than in 17 or 18 fathoms, the bottom being foul, and the

the soundings very irregular in that depth of water, but more so under that depth.

These rocks bear from the outer part of Pigeon Island SbE; E. 9 or 10 miles, and from the Flag-staff Point NbW; W. 3 or 4 miles. If you keep Chapel Point just open with the Flag-staff Point, it will bear south a little westerly; and this mark will carry you clear of all danger from these rocks, in 12 and 13 fathoms water. Thus you may avoid the rocks off Elizabeth's Point.

If you keep out in 25 or 30 fathoms between the above-mentioned rocks and Flag-staff Point, you will soon be off the bank, and lose soundings; for there are no soundings further than 2 miles off the shore hereabout. Off the Flag-staff Point, not above $\frac{1}{2}$ of a mile, you will have 100 fathoms, or perhaps no ground.

Being off the Flag-staff Point, with the wind fair, and bound into Trinkamalay Harbour, you may borrow as near as you please to the Flag-staff Point, there being 17 or 18 fathoms within a ship's length of it, and no danger.

Between Flag-staff Point and Chapel Point there are rocks that appear above water, and run out some distance into the sea, but are pretty steep to. A large quarter of a mile off Chapel Point there lies a rock above water, about the bigness of a small boat, from which a reef of rocks, under water, runs right out to sea-ward, about a large cable's length. The white mark on the inside of Elizabeth's Point, kept about a sail's breadth open with the Flag-staff Point, carries you clear of all danger hereabout, in 18, 20, or 22 fathoms. Thus you may avoid the reef off Chapel Point.

Being past the rock and reef off Chapel Point, you may steer up the bay, keeping Marble Point open to the northward of Round Island till you open the harbour's mouth: this carries you clear of all danger; but you will have no soundings. Then keep mid-way between Round Island and Elephant Island, and steer in for the harbour's mouth NWbN. as before directed, in coming from the southward. Thus you may steer up the bay.

Marble Point (a sail's breadth open to the northward of Round Island) is the leading mark both in and out of the bay, carrying you clear of all danger on the south side of the bay; and passing the shoal off Foul Point in 12 fathoms.

CCXXV. MARKS for turning into TRINKAMALAY HARBOUR.

A ship off Foul Point standing to the northward, and bound into Trinkamalay Harbour, with the wind westerly (as it most commonly is during the SW. monsoon) may borrow, on the back of the shoal off Foul Point, into 14 or 15

fathoms; and, when you open Marble Point to the northward of Round Island, you may keep up for Flag-staff Point, if the wind will let you. For a considerable space between these two points there are no soundings, although you have soundings for 1 or $1\frac{1}{2}$ mile to the northward of Foul Point. About Foul Point are gradual soundings approaching it every way. From 4 to 36 fathoms, on the edge of the bank, when Flag-staff Point bears $W\frac{1}{2}N$. and Foul Point $S\frac{1}{2}E$. the next cast no ground.

The best way to get into the Harbour of Trinkamalay, with the wind off shore, is to work up under the Flag-staff Point, and to the northward of it. Take care not to stand to the southward, so as to open the great bay, until you can pass the reef off Chapel Point with the leading mark for clearing the same (as above mentioned) on account of the strong outset which generally accompanies the westerly winds. When you stand to the northward, there is nothing to fear but what you see. Between the rocks of Elizabeth's Point and the Flag-staff Point you may stand in to 8 or 7 fathoms, the bottom being clear and sandy, with gradual soundings from 20 to 7 fathoms. When you tack, and stand to the southward, keep as close to the Flag-staff Point as possible, and borrow as near the rock and reef that lies off Chapel Point as you can, observing the leading mark in the former direction.

In standing over toward the south shore, take this precaution; do not be too bold in standing toward it; for between Foul Point and Norway Island it is all rocky and foul ground, with very irregular soundings, shoaling 5 or 6 fathoms at a cast. By no means stand in to less than 20 fathoms; for about half way between Foul Point and Norway Island, lies a very dangerous rock, with only 8 feet water on it, called the Northesk Rock, (so called from a store-ship of that name being lost thereon in the year 1748).

On or near this rock you have the following bearings; Flag-staff Point $N35^{\circ}W$. a hill in the country, and Marble Point, touching $W10^{\circ}S$. Norway Island $S38^{\circ}W$. Foul Point $E10^{\circ}N$. There are 8 and 9 fathoms all round it, and 15 and 18 fathoms a very little way without it. It is not advisable to stand further to the southward, than just to bring Round Island on with, or touching Marble Point, until you get well to the westward of Norway Island. With these bearings you will have soundings from 18 to 20, 22, and 24 fathoms, all the way between Foul Point and Norway Island; and, when a-breast Norway Island, 13, 14, or 15 fathoms. Thus you may avoid Northesk Rock.

When you tack and stand to the Northward again, you will lose soundings.
If

If you stand in with Chapel Point (off which lie a parcel of rocks above water, called Chapel Islands) there is no danger but what you see. These rocks, and all the north side of the bay to Elephant Island, and that Island also, are steep to, and no danger but what may be seen; the land being high, and no soundings on this side the bay, a cable's length from the shore.

When you tack and stand again to the southward, be careful how you stand toward Norway Island; for without it, within it, and all round it, are rocks above and under water. It is very dangerous coming near this island; therefore be careful to observe the marks above given, for keeping clear of danger on the north side of it.

When you can weather Norway Island, you may stand a good way further to the southward of the great bay of Trinkamalay; but observe this caution. Being off Norway Island, or a little within it, in standing to the southward you will often meet with large flaws of wind, which will invite you to stand on, and make you imagine you can weather away Norway Island. Be not desirous of standing on that way too soon; for to the SW of Norway Island, and a great way out in the bay, lies a large flat sand-bank, on which there are only 3, $3\frac{1}{2}$ and $3\frac{1}{4}$ fathoms. What makes this the more dangerous is, it is steep-to, has no soundings a very little way without it; and from 15 or 16 fathoms, in half a ship's length you will have $3\frac{1}{2}$ or $3\frac{1}{4}$ fathoms.

The marks to clear this shoal, are these. Keep the great tree on the middle of the Flag-staff Point of land, in one with Chapel Point, or just touching it; this will carry you clear to the westward. If you find you open the tree with the point, as you stand on, tack to the northward again, in order to keep the mark shut in or touching, when you stand to the southward again. When you can do this, you may with safety stand over for the south side of the great bay; and when you open the small island in the mouth of the lake to the southward of Pigeons Island, you are clear to the southward of it.

In standing to the south side of the great bay, you will have no soundings until you are within a mile of the south shore: however, you must keep your lead going; for it shoalens very suddenly. You may have, the first cast, 35 or 40 fathoms; the next, perhaps, 18 or 20 fathoms; and the next, 10 or 12 fathoms. Into less than 12 or 14 fathoms, it is advisable for you not to go with a great ship, but tack immediately to the northward; for from 12 to 4 fathoms are not above 2 cables length, and in some places not above 1. In some places 4 fathoms at $\frac{1}{2}$ or $\frac{3}{4}$ a mile from the shore; therefore the distance from the shore may be the more apt to deceive you.

The

The most gradual soundings, on the south side of the bay, are off the river Cotiar. The soundings are further off shore, opposite this river, than any other part of the bay. Ships may \rightarrow off this river, in from 10 to 12 fathoms, fine, soft, muddy bottom, and clear, good, holding ground; the river's mouth bearing SbE. about $\frac{1}{2}$ of a mile; there it is very smooth lying in the SW. monsoon.

Small ships may \rightarrow in 7, 8, or 9 fathoms, any where along shore, between Cotiar river, and Sambor, or the easternmost river; good ground, muddy bottom, smooth water, and safe anchorage, $\frac{1}{2}$ a mile from the shore.

It hath been mentioned above, that in standing toward the south side of the great bay, when in 14 or 12 fathoms, you should tack to the northward: by so doing, (supposing the wind westerly, as supposed all along) you will lie up for Round Island, and must go close under the lee thereof, it being steep to: this will enable you to fetch into the harbour with a full sail. As you pass through the harbour's mouth, keep close on board the weather shore, on which you may borrow within a ship's length any where, and so run into the harbour, and \rightarrow where you please.

Mr. Nichelson's Directions for making a Passage from the Coast of Coromandel to Bombay, in the South-West Monsoon.

CCXXVI. *Of SHIPS stretching off the COAST, near MADRAS.*

I have known several ships that have made this passage in the south-west monsoon, but it has been tedious and troublesome. Those that stretched directly off the Coast of Coromandel from Madras have met with strong northerly currents, and the winds (which generally hang much southerly) so that they have not been able to fetch any further than Acheen Head. They have been hampered with southerly winds and northerly currents, which have prevented their getting to the southward, and made their passage long and troublesome. Some have been three, and others four months in making this passage, which in common is reckoned a ten-weeks passage; whereas it may be made in six weeks with great ease, by taking proper methods.

If I were to make a passage from Madras to Bombay, in the south-west monsoon, I would work up along the Coromandel Coast from Madras as far as Negapatnam, by taking the advantage of the sea and land winds; and would \rightarrow when the wind and current were against me. This passage from Madras

to Negapatnam may be made in 10, 12, or 14 days at most, in any month of the year, except May, or the latter end of April; at that time the current runs very strong to the northward.

In June, July, or August, ships generally make a passage from Madras to Negapatnam in 9, 10, or 11 days; and when you are off Negapatnam, the worst part of the passage is over: or it may be said to be made sure; for there you will meet with strong land-winds, which will run you over to Ceylon in 48 hours. I have several times run from Negapatnam, and ~~4~~ed in Back Bay at Trinkamalay in 48 hours.

All along the north-east part of Ceylon you will meet with strong westerly winds, which will run you to the southward very quickly. I would advise you to coast it along Ceylon as far as the Friar's Hood: this I have done with the westerly winds from Trinkamalay in two days. From the Friar's Hood I would stretch off, and take my departure from it. With brisk gales at SW. and WSW. I have crossed the line the third day from the Friar's Hood. Longitude made from the Hood, $5^{\circ} 26' E.$ variation $37' W.$ In latitude 2° or $2^{\circ} 30' S.$ you meet the SE. trade-winds. I would run to the southward, into $9^{\circ} 30'$ or $10^{\circ} S.$ there you will have the SE. trade-winds blow fresh; and there I would run down my westing. About 14° or 15° westing from the Friar's Hood will be sufficient. The land near the sea off the Friar's Hood, when it bears west, lies in latitude $7^{\circ} 16' N.$ and longitude, by computation, $82^{\circ} 8' E.$ from London. The longitude of Seuhelipar, which is one of the westernmost of the Laccadive Islands, is $72^{\circ} 24' E.$ from London; so the difference of longitude between the Friar's Hood and Seuhelipar is $9^{\circ} 44' W.$ If you go 4° or 5° to the westward of the Laccadives, you will be far enough to the westward; this will make near 14° or 15° westing from the Friar's Hood.

Being in latitude $9^{\circ} 30'$ or $10^{\circ} S.$ I would steer so that by the time I had made $9^{\circ} 30'$ or 10° west longitude from the Friar's Hood, the latitude should be 3° or $3^{\circ} 30' S.$ Then I would steer to the westward $4^{\circ} 30'$ longitude more, in latitude $2^{\circ} S.$ This track leads between the islands called Yas de Diego Rays and the shoals of Basses de Chagos.

Those who have made the Islands Yas de Diego Rayes in going this track, say they are pretty high. I have seen them set, in ship's journals, from NNE. to NE. distant 8 or 9 leagues; but know no business that ships have near them.

They are a large cluster of islands, the body of them near the line, and near the meridian of the westernmost of the Laccadive Islands. I would cross the latitude of them, or any other islands, or shoal, in the day-time.

Being

Being in latitude 2°S . and longitude, made from the Friar's Hood, about $14^{\circ} 30'\text{W}$. I would then cross the line, and steer northward. Hereabout the west variation begins to increase. Before you cross the line, you will meet the south-west monsoon; and, as soon as you get into north latitude, you will have fresh gales, with hazy dirty weather, and the more so as you run to the northward.

Having crossed the line in the above-mentioned longitude, $14^{\circ} 30'\text{W}$. from the Friar's Hood, with this westing you will steer to the northward, taking care to keep up your westing. Let me remind you that the Coast of Malabar lies NNW. and SSE. so that a north course will carry you in upon the shore, and a NNW. course will carry you parallel to the Coast of Malabar. I have seen by ships journals, that for want of this consideration, they have fallen in with the coast sooner than they intended, by steering north.

In sailing this track, the variation has increased to about 3° or $3^{\circ} 30'\text{W}$. This (if properly attended to) will correct your longitude. I have sailed this track, and very carefully observed the variation, which I would recommend as your principal and sure guide, in sailing along the track above-mentioned.

In latitude from 8° to 10°N . and 7° to the westward of the Laccadive Islands, I have had $4^{\circ} 12'\text{W}$. variation; and in the above latitudes, variation $3^{\circ} 30'\text{W}$. $5^{\circ} 30'$ to the westward of these islands; also, variation $2^{\circ} 27'$ or variation $2^{\circ} 30'\text{W}$. in longitude $3^{\circ} 30'$ to the westward of these islands; likewise in the above latitudes, variation $1^{\circ} 27'$, or $1^{\circ} 30'\text{W}$. to the westward of these islands. And variation $1^{\circ} 5'$ or $1^{\circ} 8'\text{W}$. in sight of these islands. When you have the variation as above, you may depend upon being the several distances to the westward of the Laccadive Islands. Sailing more west, the variation has increased, and eastward it has decreased.

In latitude from 11° to 12°N . variation $3^{\circ} 5'\text{W}$. $8^{\circ} 26'$ to the westward of Goa. In latitude from 12° to 14°N . variation 3° . Also, variation $3^{\circ} 5'\text{W}$. 7° westward of Goa. In latitude $14^{\circ} 30'\text{N}$. variation $2^{\circ} 12'\text{W}$. in longitude $3^{\circ} 30'$ westward of Goa. In latitude 15° , and $15^{\circ} 30'\text{N}$. variation $1^{\circ} 28'$ or $1^{\circ} 30'$ when 2° westward of Goa. Off Goa, in sight of the land, in latitude $15^{\circ} 30'$, variation $42'\text{W}$. These for near the year 1760.

A ship keeping in $2^{\circ} 30'\text{W}$. variation, has gone far enough to the westward, and clear of every thing, in going the outer passage to Bombay. Keeping in 3°W . variation, a ship has been carried along to the northward, parallel to the coast.

In order to go through the remaining part of your passage, observe as follows. Steer to the northward till you get into latitude $18^{\circ} 50'$: this is the proper

proper latitude to steer in to the eastward for Bombay. You must make an allowance, in the course steered, for a southerly current, which in the south-west monsoon, you generally find setting along the coast, from 15 to 20 and 24 miles in 24 hours. Steer to the eastward in the parallel of $18^{\circ} 50' N.$ till you have soundings; these you have full 30 leagues off the coast, at 80 or 90 fathoms, and they shoalen very gradually.

CCXXVII. DIRECTIONS for Ships bound to the MALABAR COAST, from ACHEEN HEAD.

If a ship is bound to the Coast of Malabar, Bombay, &c. from off Acheen Head, she must steer for Ceylon, and take care to fall in with Ceylon, about the Friar's Hood or the Great Basses; then keep the Coast of Ceylon close aboard, and coast it by Point de Gall, &c. taking care to keep in soundings, so that in calms or contrary winds you can \rightarrow . By this means you will prevent being driven off the coast by the strong south-west currents; for some ships have been driven from Ceylon to the Maldivé Islands, by their not keeping in \rightarrow ing ground.

CCXXVIII. Mr. Nicholson's DESCRIPTION of the ROAD and HARBOUR of BOMBAY.

The town of Bombay is situated on the SE. part of the island of the same name, in latitude about $19^{\circ} 10' N.$ It is fortified all round on the land side, and has a strong fort or castle which commands the harbour, which is large and safe, and where ships may lie sheltered from all winds. But it is difficult and dangerous of access, on account of rocks and shoals that lie hid under water; therefore it would be imprudent for any person, not well acquainted with these, to attempt carrying a ship in without a pilot, who generally comes off to ships when they appear in the offing. I have often seen ships above the Sunken Rock, before the pilot has been on board; then the greatest danger has been past. There are no good draughts of this harbour, nor have I ever seen either a good description of it, or tolerable directions for sailing into or out of this place. I shall therefore give a description of the appearance of the land about Bombay, and the dangers going into and out of this harbour; with the exact marks for them, and the best marks to go clear of them; also of the best \rightarrow ing-places, both in the fair and foul weather monsoon, &c.

CCXXIX. INSTRUCTIONS for knowing the LAND about BOMBAY HARBOUR.

The high land of Choul, to the southward of Bombay, is an high bluff to the northward; and to the south part low land, stretching out to the westward; at a distance making very much like islands. From thence to the northward you will see the high land of Tull; and then the Island Caranjar, which is very remarkable, having an high hill at each end, and being extremely low in the middle: at a distance they appear like separate islands. The southernmost of these hills is the largest and highest, and is called Great Caranjar: on the northern part of this hill, quite on the top of it, are the remains of an ancient monastery, built by the Portuguese when they were in possession of this part of India. The other hill on this island is also high, and is called little Caranjar. These hills bear SbE. and NbW. of each other, and are about a mile a sunder. This island makes the eastern part of the Harbour of Bombay.

A little to the northward and eastward of Little Caranjar, lies a small island, called Elephanta, which appears at the distance of 3 or 4 leagues, with the 2 hills of Great and Little Caranjar, like 3 separate islands; the Elephanta the lowest and smallest of the three.

To the northward of the Elephanta, there is a very remarkable high land, which makes like a Neat's Tongue, the bluff end to the northward; it may be seen, in clear weather, 14 or 15 leagues. When the highest part of the Neat's Tongue and Bombay Church are in one, they bear NEbN.

As you run in for the land from the westward, you will raise Malabar Point: this is the first part you will see of Bombay Island. It appears flat, and full of trees; and as you approach it nearer, it makes in a steep point to seaward, with a small white pagoda a little to the northward.

Hunary and Kanary are 2 small islands, in latitude $18^{\circ} 45' N$, and are not to be seen farther than the Tombs on Old Woman's Island. Kanary, when first seen, appears like 2 small rocks or islands, a small distance asunder, (it being higher at the extremities than in the middle) by which it may be known: this is the outermost of the two islands, and it is fortified all round. From the Island Kanary, to the southernmost part of Old Woman's Island, the course is N.E. 10 or 11 miles; the depth of water between them is 8, 9, and 10 fathoms.

Old Woman's Island is separated from that of Bombay by only a very narrow channel of the sea, which is fordable at half-tide: it is about $1\frac{1}{2}$ mile in length, but very narrow; lying NbW. and SbE. There are two remarkable

remarkable white tombs on it, which may be seen a great way at sea; the one round, which is also the whitest; the other square: they bear South $52^{\circ} 30'$ W. and N. $52^{\circ} 30'$ E. of each other. It has also an high grove of cocoa-nut trees on that part of it next Bombay. The outer, or southernmost part of this island is the highest: on it is a look-out house, with attendants, where signals are made to the fort when they see any ships or vessels in the offing. The other parts of this island are low.

There is a remarkable hill, a considerable distance in land, which bears the resemblance of a Funnel turned upside down, and is therefore called Funnel Hill. Whether it be a tower built on the top of this hill, or the effect of nature, I cannot tell.

CCXXX. *Of the DANGERS going into and out of BOMBAY HARBOUR; with the MARKS for them.*

The first danger, that lies in the way, going into Bombay Harbour, is the reef off the southernmost part of the Old Woman's Island; it runs out in 2 prongs, one toward the SE. and the other toward the SW. full 2 miles. Great part of this reef dries at low water. These prongs are the more dangerous, since the water does not shoalen as you approach them, especially the SW. prong, there being as much water within a ship's length thereof, as there is a mile without it, viz. $7\frac{1}{2}$ fathoms at low, and $9\frac{1}{2}$ fathoms at high water; and the same water between the prongs. The SE. prong is not quite so steep to: it shoals from 8 or $7\frac{1}{2}$ fathoms, to $5\frac{1}{2}$, 5, and $4\frac{1}{2}$ fathoms, with over-falls of 1, or $1\frac{1}{2}$ fathom, more or less, at a cast; so that great ships should be very cautious in standing toward this reef, and take special care they do not get between the prongs; for there soundings will be no guide to them.

The marks for the outer part of the SW. prong are, the Flag-staff of Old Woman's Island, on the highest part of the Neat's Tongue, N 40° E. and the Funnel Hill one with, or touching, the first rising low land, at the foot of the north part of Great Caranjar Hill. The Funnel then bore east; had $1\frac{1}{2}$ and $2\frac{1}{2}$ fathom at low water; a ship's length without that, had $7\frac{1}{2}$ and $7\frac{1}{2}$ fathoms, and the same water between the prongs.

The marks for the outer part of the SE. prong are, the Oyster Rocks, a ship's length open with the NE. bastion of Bombay Fort, when the north part of Great Caranjar Hill bore E 3° S. and the inner part of Malabar Hill one with the outer part of Old Woman's Island; then had $3\frac{1}{2}$ and $3\frac{1}{2}$ fathoms at low water, with great over-falls, of about 2 fathoms at a cast; and when the Oyster Rock

was in one with the NE. bastion, had $6\frac{1}{2}$ and 7 fathoms; at high water, $8\frac{1}{2}$ and 9 fathoms.

The Sunken Rock is also very dangerous, as it lies right in the fair way going into and out of the harbour, and is steep to; there being as much water within half a ship's length of it, as any where without it. There are 7 and $6\frac{1}{2}$ fathoms close to it. Part of this rock dries at low water on spring-tides.

The marks upon it are, Mazagon House (a square white house under Mazagon Hill) just shut in with the NE. bastion of Bombay Fort, which bore $N9^{\circ}E$. the Flag-staff on Old Woman's Island, $N73^{\circ}W$. Malabar Point, $N36^{\circ}W$. and the round white Tomb on Old Woman's Island, which is the northernmost, $N27^{\circ}30'W$.

The Dolphin Rock is also very dangerous, it being dry at low water, spring-tides, and as there are 4 and $3\frac{1}{2}$ fathoms, within a ship's length of it, at low water.

The marks upon this rock are as follow. Malabar Point, half a ship's length open to the northward of the north part of the grove of cocoa-nut trees (on the north part of Old Woman's Island) which is called Broughton's Grove; and the brab-tree in Bombay Castle in one with Dungaree Fort; also the round white tomb on Old Woman's Island and a low brab-tree in one.

Right opposite Bombay there is a shoal, called the Middle Ground, which is very dangerous. It is formed by sharp ragged rocks, like pyramids, and of course has very irregular soundings upon it, shoalening or deepening 2 fathoms at a cast. This shoal is steep to, on all sides, having $4\frac{1}{2}$ or 5 fathoms close to it at low water, which is as much as there is in any other part of the harbour. It has about 3 feet water on it, at low water, on spring-tides; though sometimes in the south-west monsoon, I have seen about the length of a boat of it dry.

The marks for the shoalest water on the Middle Ground are as follows. Mendam's Point, $N73^{\circ}W$. Bombay Church and Hough's House in one, $N43^{\circ}W$. and Suree Fort just shut in with, or touching, the east part of Crois Island, $N8^{\circ}30'E$.

The Shoal of Caranjar is very dangerous; it is mostly sand, but in some places there are rocks. It lies N. and S. from the south point of Great Caranjar to the north point of Little Caranjar, and stretches $\frac{1}{2}$ of the harbour over from Caranjar. It has only 6 feet water on it at low water, and in very low tides part of it is dry. On most parts of it, the soundings are very irregular, from 3 to 1 fathom. When you come near it, you shoalen your water from $6\frac{1}{2}$ to 4 fathoms, and soon to 3 and $2\frac{1}{2}$ fathoms.

The

The marks for Caranjar shoal, are as follow. The south point of the Neat's Tongue just coming on with the west part of Butcher's Island. You are then on the outer edge of it. When the Funnel Hill is on with the north part of the island that lies to the eastward of Little Caranjar, you are then on the north part of it; and, when the south part of Great Caranjar bears E½N, you are then on the south part of it.

There is likewise another shoal off the west point of Pen River, called Tull Point; which is very dangerous. They are sharp rocks with irregular soundings on them. On this shoal the Medway struck, and narrowly escaped being lost; it has 3½, 3¼, and 3 fathoms water upon it. As you approach it, the water shoals suddenly from 7 to 4 and 3½ fathoms.

When the outer low point of Pen River, and the high bluff inner point of the same river are in one, (E½S.) you are right off it; it lies right out about a large mile W½N. and is pretty broad.

CCXXXI. *Directions for a large SHIP to round the REEF off OLD WOMAN'S ISLAND into BOMBAY ROAD and HARBOUR.*

Being in the offing, in between 10 and 12 fathoms, steer in for the outer or southern part of the Old Woman's Island, till you open the Funnel with the north part of Caranjar Hill: keep them just touching; they will then bear E½N. Steer to the eastward with these marks on; and when the Flag-staff at Old Woman's Island is on with the highest part of the Neat's Tongue, or N40°E. you are then a-breast of the SW. Prong.

By still steering on to the eastward with the same marks, you will have 9, 9½, and 10 fathoms, according to the time of tide; and when you bring the Oyfter Rock to the westward of Bombay Flag-staff, you will be clear of the SE. Prong, and will have depth of water from 8½, 9, 9½, or 10 fathoms, according to the time of tide. You may then haul to the northward, and steer up towards the harbour, with the latter marks on; and when you have shut in Malabar Point, with the outer part of Old Woman's Island in 8 fathoms, then keep to the eastward, and open Mazagon House a sail's breadth to the eastward of the NE. bastion, in 7½, 8, or 8½ fathoms.

Steer up the harbour with these marks on (N10°E.) and when Malabar Point is on the north part of the Brab Grove, (on the outer part of Old Woman's Island) you are then a-breast of the outer or southern part of the Sunken Rock; and when the round white tomb is on with the southern part of the Oyfter Rock, you are clear to the northward of the Sunken Rock, in 7½, 7¾, and 8 fathoms, and may then haul in toward Old Woman's Island, in 7½ and 7¾ fathoms.

To

To keep clear of the Dolphin Rock, you must open the Bunder Gate to the eastward of the Battery Pier-head; and when Malabar Point is opened a large ship's length to the northward of the north part of Broughton's Grove, you are then clear to the northward of the Dolphin Rock, in 6, $6\frac{1}{2}$, and $6\frac{1}{2}$ fathoms.

Another good leading mark to go clear of the Dolphin is; go no nearer Old Woman's Island than to bring Dungaree Fort and Bombay Flag-staff in one; but rather keep Dungaree Fort a ship's length open to the eastward of the Flag-staff; this carries you clear of all danger from Old Woman's Island (after you are past the Sunken Rock) in $5\frac{1}{2}$, 6, and $6\frac{1}{2}$ fathoms, according to the time of tide.

To avoid the Middle Ground, (going to the eastward of it) keep Suree Fort a large ship's length to the westward of Cross Island. This will carry you directly to the harbour of Bombay, which is between the Middle Ground and the Fort; there you may \rightarrow in 4, $4\frac{1}{2}$ or $4\frac{1}{2}$ fathoms at low water, and $6\frac{1}{2}$ or 7 fathoms at high water. To go to the eastward of the Middle Ground, you must open Suree Fort, 2 large ships length to the eastward of Cross Island; this will carry you clear in $5\frac{1}{2}$, $6\frac{1}{2}$, and $6\frac{1}{2}$ fathoms. The best mark for the southern part of the Middle Ground is, Malabar Point and Mendam's Point in one: this mark will carry you clear, to the southward, in $5\frac{1}{2}$, 6, and $6\frac{1}{2}$ fathoms. The best mark for the north part of the Middle Ground is, the Church-steeple in one with the Bunder Gate: this will carry you clear, to the northward, in $4\frac{1}{2}$, $5\frac{1}{2}$, and 6 fathoms.

CCXXXII. *Directions for turning into BOMBAY HARBOUR.*

Being in the offing, with the winds contrary, and being obliged to turn it into Bombay; when you have got so far in as to have opened the Funnel Hill to the northward of the north part of Great Caranjar Hill, and you are standing to the westward, toward the reef off Old Woman's Island, you ought to tack just before you bring the Oyster Rock on with Bombay Flag-staff: this is a good mark for you, until you shut in Malabar Point with the outer part of Old Woman's Island. The next turning mark to be observed on this side the harbour is as follows. Having shut in Malabar Point with the outer part of Old Woman's Island, you must not stand further toward Old Woman's Island than to bring Mazagon House a ship's length open to the eastward of the NE. bastion of Bombay Fort: and when you have passed the Sunken Rock (which is when the round white tomb on Old Woman's Island is on the south part of the Oyster Rock) you may then stand toward Old Woman's Island, and tack just before
Dungaree

Dungaree Fort is on with Bombay Flag-staff. This is a good mark for you all the way up to the harbour.

CCXXXIII. DIRECTIONS for standing in towards the EASTERN SHORE of BOMBAY HARBOUR.

Being in the offing as before, and turning into Bombay, you may stand toward the eastern shore into 7 fathoms water, but come no nearer; and when you come a-breast the southernmost point of Penn River (called Tull Point, off which there is a dangerous shoal) stand no nearer the point than 7 fathoms, and guard against the indraught of Penn River, the flood setting strong round this point into Penn River. If you are drawn into this flood, you will be obliged to \rightarrow , though the bottom is very foul and rocky: this makes it dangerous \rightarrow ing. As the flood sets strong in, so does the ebb set as strong out, which may be as much to your advantage as the flood was to your disadvantage; for, if you should happen to be over on that shore, when the ebb begins to make, it will set you up to windward, and enable you to fetch into Bombay. For a long mark, stand no further to the eastward than to keep the south point of the Neat's Tongue a large ship's length open to the westward of the west part of Butcher's Island; this will carry you clear both of this shoal, and that of Caranjar. In turning up to Bombay (as you may have occasion to make several trips over toward Caranjar) observe always to tack when the south part of the Neat's Tongue comes within a ship's length of the west part of Butcher's Island.

It is very common for ships (with the wind northerly) to turn up between Caranjar and the Middle Ground, and come round to the northward thereof, into the harbour; this is the best way to come in on that occasion. The marks to keep clear of the Middle Ground on all sides, have been before described. You will have 7, 8, or 9 fathoms between the Middle Ground and Caranjar Shoal, according to the time of tide.

In the SW. monsoon (which is the bad-weather time, and when no ships can be hove down at Bombay, on account of the swell at that season) ships go behind Butcher's Island, and heave down there, the sea being much smoother. The navigation from Bombay to Butcher's Island is somewhat difficult (on account of a large reef of rocks, to the south-westward of Butcher's Island, both above and under water; and another reef of rocks, over towards the Shoal of Little Caranjar, which is never seen but on extraordinary spring tides, at low water). The leading marks for carrying a ship to Butcher's Island from Bombay, are as follow.

Keep

Keep Blatchford's House (a high house in Bombay) about its breadth open with the Battery Pier-Head; this will lead you clear of all danger to Butcher's Island. You will have depth of water, in going, 5, $5\frac{1}{2}$, and 6 fathoms for about half way over; and as you come nearer Butcher's Island, you will have 7, 8, and 9 fathoms, according to the time of tide.

There is another leading mark, which you will see as you run over, equally as good as Blatchford's House; and when you are $\frac{1}{2}$ of the distance over, it is better, by being nearer to you, and better seen; namely: on the south part of a low island (called Hog Island) which is extremely low, are some tall straggling trees; about a ship's length from the low extremity of this point, you will see a tuft of large high green trees: keeping this tuft of trees open, or shut, or just touching with the south point of the Elephanta, will carry you clear of all danger. Run with this mark till you open all the high land of the Neat's Tongue to the eastward of Butcher's Island; then haul up to the northward of Butcher's Island, and \rightarrow to the eastward of it, right off the Tower, in $4\frac{1}{2}$ fathoms at low water, and $6\frac{1}{2}$ or 7 fathoms at high water, $1\frac{1}{2}$ cable's length from the island. Here the tides run very strong.

Between Butcher's Island and the Elephanta you have 6, 7, 8, and 9 fathoms water. Off the NE. part of Butcher's Island there is a shoal runs out for a considerable way. The SE. point is bold to; but off the south point begins the rocky reef, which is very dangerous.

CCXXXIV. MARKS for anchoring in BOMBAY HARBOUR.

The proper place for \rightarrow ing is between the Middle Ground and the Fort. Large ships should not go higher up than to bring the brab-tree in the fort in one with the flag-staff, or rather the tree open to the southward of the flag-staff. Higher up is shoal water, and not fit for great ships. The lower part of the harbour is when Mendam's and Malabar Points are in one. Between these is, what is properly called, the harbour; being very large and safe, and fit to contain a great number of ships.

As good a birth, and as convenient as any in the harbour, is the church-steeple on the north part of Hough's House, $N47^{\circ}W$, Bombay Flag-staff $N29^{\circ}W$, and Cross Island $N21^{\circ}E$. With these bearings you are about a large quarter of a mile distant from the fort, and have 4 fathoms at low water, and $6\frac{1}{2}$ and $6\frac{3}{4}$ fathoms at high water. No where in the harbour are there above $4\frac{1}{2}$ fathoms at low water, spring tides. Just within the south or lower part of the Middle Ground, you may lie in $4\frac{1}{2}$ and $4\frac{3}{4}$ fathoms at low water.

When

When ships are ready for sailing, they go out into (what is called) the Road; this is to the south-eastward of the Middle Ground: there they \rightarrow in $5\frac{1}{2}$ fathoms at low water, and $7\frac{1}{2}$ or 8 fathoms at high water; Bombay Flag-staff NbW $\frac{1}{2}$ W. or NNW. the Flag-staff on Old Woman's Island WbS $\frac{1}{2}$ S. and Broughton's Grove WNW $\frac{1}{2}$ N. distance from the fort about a mile, or $1\frac{1}{2}$ mile.

There is a good \rightarrow ing-place for great ships without the Middle Ground. In May, 1761, the whole of his Majesty's squadron being at Bombay, and part being ready for the sea, (being then the bad-weather monsoon) it was thought unsafe for those ships that were fit for sea, and drew too much water, to lie in the harbour, there not being at low water, spring-tides, above two feet more than they drew. They went without the Middle Ground: there they moored, and lay in safety, in $6\frac{1}{2}$ fathoms at low water, and $8\frac{1}{2}$ fathoms at high water.

The bearings in the Elizabeth, which was one of them, were as follow. The Flag-staff on Old Woman's Island and the Oyster Rock in one, WSW. Bombay Flag-staff NW $\frac{1}{2}$ W. Cross Island N $\frac{1}{2}$ W. the Bunder Gate on with the church-steeple, N 55° W. and Mazagon Fort a sail's breadth open to the eastward of Cross Island, N 10° W. Here ships have room enough to drive, and let go another \rightarrow , if they happen to part their cables, in the stormy months.

There is another good \rightarrow ing-place, where ships may \rightarrow when they cannot get out in one tide, which often happens in the SW. monsoon. In order to keep what you have got, and to be ready to take the advantage of the next tide, the best place to \rightarrow in is, to bring Malabar Point on with, or touching, the outer part of Old Woman's Island N 19° W. and the breakers on the Sunken Rock on with Bombay Flag-staff N 9° E. in 7 fathoms at low, and 9 fathoms at high water. Here you are well sheltered from the great SW. swell by the reef off Old Woman's Island, the bottom clear, and good holding ground.

CCXXXV. DIRECTIONS for SAILING out of BOMBAY HARBOUR.

Being bound outward from Bombay, keep Suree Fort a ship's length open to the westward of Cross Island; this will carry you clear of the Middle Ground: and when you open Malabar Point to the southward of Mendam's, you are then to the southward of it, and may haul out to the eastward. Steer down the harbour, with Mazagon House a ship's length, or only a sail's breadth open with the NE. bastion (this will carry you clear of the Sunken Rock) till Malabar Point is open to the southward of the Brab Grove on the outer part of Old Woman's Island.

You are then past the Sunken Rock, and may shut Mazagon House in with the NE. bastion; and when you open Malabar Point with the outer part of

Old Woman's Island, you may keep close up under the reef, if the wind is westerly, as it generally is in the afternoon). For a leading mark, keep Bombay Flag-staff a sail's breadth, or a ship's length open to the eastward of Oyfter Rock, till you have shut the Funnel Hill in with the north part of Great Caranjar Hill: then you are clear of all the reef off Old Woman's Island, and may haul to the westward as you please.

If you are bound out of Bombay Harbour, and have the wind fair, keep Suree Fort a ship's length open to the westward of Cross Island; and when Malabar Point is open with Mendam's Point, you are to the southward of the Middle ground. After you are below the Middle Ground, you may keep more to the eastward, and need no other mark but to keep Mazagon House a sail's breadth open to the eastward of the NE. bastion, till you shut the Funnel Hill in with the north part of Great Caranjar Hill: then being clear of the SE. Prong, you may haul to the westward, or do as you please; and when Bombay Church is on with the highest part of the Neat's Tongue, NEbN. you are clear of the SW. Prong.

If you are coming into Bombay Harbour, with the wind large, you need no other marks than these. When you have opened the Funnel Hill to the northward of the north part of Caranjar Hill, keep Mazagon House a sail's breadth open with the NE. bastion: this will run you up the harbour, clear of all danger, 'till you come to the foot of the Middle Ground. Then be sure to open Suree Fort a ship's length to the westward of Cross Island, before you bring Malabar Point and Mendam's Point in one; so run up to the westward of the Middle Ground, and \leftrightarrow between it and the Fort, as you please.

The reason why so many marks are given in the above directions, is, to shew how near a ship may borrow upon the reef, with a scant wind, in order to make the most of the wind, time, and tide, in going in or out of the harbour: for, by a ship's keeping close up under the reef with a westerly wind, and rounding the Sunken Rock as close as possible, a ship may fetch into the harbour; whereas, by giving them too large a birth, she will not.

CCXXXVI. MARKS for coming into BOMBAY HARBOUR in hazy Weather.

Being in the offing in hazy weather, so that you cannot see the proper marks for coming into the harbour, observe as follows. If you cannot see the Funnel Hill (which is sometimes the case) keep the north part of great Caranjar EbN. till you open the harbour of Bombay: and if you cannot see Mazagon House nor Hill, which is often the case in hazy weather, then keep the NE. bastion of
Bombay

Bombay Fort N. or N $\frac{1}{2}$ E. this will carry you clear of the Sunken Rock. When you are within that, you will see the other marks to carry you clear of the Middle Ground, &c.

Being in the opening of the harbour, and seeing nothing else but the NE. Bastion and Dungaree Fort; keep the said fort just open, or touching the NE. bastion, and you may be sure that mark will carry you clear of the Middle Ground, and also of the Dolphin Rock, into the Harbour; where you may \rightarrow with safety.

CCXXXVII. *The Setting of the TIDES in and out of BOMBAY HARBOUR.*

The first of the flood sets SEbE. across the points of the reef off Old Woman's Island. The middle and latter part of the flood sets E. and EbN. right across the harbour into Penn River, very strong; and the ebb is the reverse. When Malabar Point and the outer part of Old Woman's Island are in one, you then have the tide set up the harbour NbE. It continues to set so far as the upper part of the Middle Ground, without which it divides. One part sets strong over toward Butcher's Island, and then runs to the eastward between Butcher's Island and little Caranjar; and there it soon divides again, one part setting to the SE. between the Elephanta and little Caranjar, and the other between Butcher's Island and the Elephanta. From the upper part of the Middle Ground, another part sets to the northward, up to Cross Island, from thence to Suree, and so round the Island of Bombay, &c. The ebb is the reverse.

Note, The tide runs longer without the Middle Ground than any where within it. In the harbour it flows full and change nearest SbE. and NbW. 11 hours 15' or $\frac{1}{4}$ after 11 o'clock; and in the offing N. and S. or 12 hours. It flows perpendicularly 16 or 17 feet in spring tides.

The latitude of the southernmost part of Old Woman's Island, by several observations, is 18° 56' N. The longitude deduced from Goa, is 73° 6' E. from London. The variation of the compass, by several observations, 53' westerly, 1760.

CCXXXVIII. *Of WOODING and WATERING at BOMBAY.*

There is no wood here but what is brought over in country boats, and in very small billets: it is pretty dear, notwithstanding great quantities are brought over. The watering-place is in the middle of the garrison; but the water is

conducted in pipes to the Bunder: there the casks are filled in the boats, by means of leathern hose that lead from the cocks. There is great plenty of water in the garrison.

CCXXXIX. *Of PROVISIONS and REFRESHMENTS at BOMBAY.*

Good provisions and refreshments are to be had here both for present use and sea-store, such as sheep, hogs, ducks, fowls, fresh fish, and vegetables, in great plenty; also biscuits, pease, rice callivances, flour, arrack, and sugar; this place being plentifully supplied from Surat, and all the adjacent places, both coast-ways and from in-land parts, by country vessels bringing them down the rivers.

Fresh beef is the only scarce species of provisions here: not that there is any scarcity of cattle in the country hereabout; but the inhabitants, being Gentoos, will not sell their cattle, nor suffer them to be killed; so that what fresh beef the ships are supplied with here, is brought from Surat, Bencoot, and other places along the coast; this makes it very scarce.

The situation of this port, and its being a safe and spacious harbour, with a good marine yard and docks fit to receive large ships, where they can be repaired with all manner of conveniency, makes it a place of great trade, and much frequented by ships to and from all parts of India. There are also many ships and vessels belonging to this place. Here is an excellent dock-yard, where they build the India Company's ships of war, grabs, and other vessels, having great plenty of timber, and all sorts of naval stores. Here are also two excellent dry docks, one a-head of the other. The inner dock will receive a 50 gun ship, and the outer one a 70 gun ship: they were building another in 1763, without the other two, which will be fit to receive a 74 gun ship.

CCXL. *Other DIRECTIONS for knowing the LAND, going into BOMBAY HARBOUR.*

The high land of Choul is bluff to the northward, and the southernmost part is low land, stretching out to the westward, making very much like islands. From thence to the northward, you will see the high land of Tull; and then the Island Caranjar, which is very remarkable, having an high hill at each end, and being extremely low in the middle. The southernmost of these hills makes not unlike a ship's bottom, near the northernmost end whereof there remain the ruins of an ancient monastery, by which ships steer when bound into Bombay Harbour.

A little

A little to the northward of Caranjar lies a small high island, called Elephant. This island appears, at the distance of 4 or 5 leagues, with Caranjar, like three separate islands, and to the eastward is a very remarkable high land. That part under which Bombay lies, makes like a Neat's Tongue, the bluff to the northward, may be seen in clear weather, 17 or 18 leagues off. As you run in for the land from the westward, you raise Malabar Point: this is the first part you will see of Bombay island; it appears flat and full of trees. The Islands Hunary and Canary two small islands, in latitude $18^{\circ} 50' N.$ are not to be seen further than the Tombs on Old Woman's Island.

To go clear of the reef or prongs which run out from Old Woman's Island, keep the Funnel or Savajee Castle just open with the White Building, or ruins of the Antient Monastery, on the southernmost hill of Caranjar. If, in thick weather, you cannot see the Funnel, then keep the said building $EbN.$ or $E;N.$ till Hunary (the westernmost of the two islands) bears $S;W.$ or $S.$ or that you have Cross Island (a small round island above Bombay Harbour) well open to the eastward of Oyster Rock; then you may safely haul round the $SE.$ Prong of the reef for the road.

A stranger should not round the reef under 9 fathoms, lest he be hampered between the Prongs, as it sometimes happens. In 6 and 5 fathoms you have hard ground and over-falls.

If you are obliged to turn it, be on your guard against the indraught into Penn River, and tack in about 6 or 7 fathoms, according as you find the tides; but after any great rains you have strong outlets from the rivers.

Next you are to avoid the Sunken Rock, which is sometimes dry at very low tides, but mostly it has 3 feet on it at low water, and the water rises about 17 feet. To keep clear thereof, to the eastward, the long mark is Mazagon House (which is a square white house under Mazagon Hill) kept open a large sail's breadth with the easternmost bastion of Bombay Castle. Steering with these bearings you generally have 8 or 9 fathoms, till you are the length of the Oyster Rock; and for a thwart mark bring the westernmost white tomb, on Old Woman's Island, open to the northward of the easternmost tomb on the said island.

The tombs in one, is the mark for the rock; and open either way, you are above or below it. There were formerly three tombs on Old Woman's Island, but one of them is demolished.

Another thwart mark are 5 brab-trees on Old Woman's Island, planted thus: the middle one being in one with Malabar Point; the rock is then in the same

same direction. If you go to the westward of the Sunken Rock, between that and Oyſter Rock, which is a clear channel, of about a mile in breadth, having 4 fathoms, ouzy ground, between the rocks, almost cloſe to; the leading mark is to keep Mazagon Houſe ſhut in behind the higheſt part of the caſtle; but ſhips generally paſs it to the eaſtward; there they have more ſea-room.

When you are paſt the Sunken Rock, ſteer for the ſhips in the road, keeping Croſs Iſland open to the eaſtward; or if you go the inner paſſage, then open to the weſtward of Sion, or Siam Hill, which is the higheſt on Bombay, and has a fort on it; and when you have ſhut in Malabar Hill, with the trees on Mendam's Point, you are above the lower end of the Middle Ground; then you may birth the ſhip as you think proper, in 4 or 5 fathoms. The beſt ground for European ſhips is to keep the brab-tree open; but if the wind hangs in the NE. quarter, it is much the beſt way to work it round the north head of the Middle Ground, becauſe the tide holds longer there than toward Old Woman's Iſland, and you likewiſe gain a leading wind to birth your ſhip. When you have the brab-tree, in the caſtle, open to the northward of the Flag-ſtaff, you may run in with ſafety.

In the harbour it flows, full and change, neareſt SbE. and NbW. or $\frac{1}{4}$ after 11 o'clock.

CCXLI. DIRECTIONS for Ships that are obliged to ſail from BOMBAY in the Time of the SOUTH-WEST MONSOON, and bound to the SOUTHWARD.

At this ſeaſon of the year, as ſoon as you have got without the harbour of Bombay, there runs a prodigious ſea, which, with a ſtrong ebb-tide, occasions it to break, as though you were in ſhoal water. We experienced this in the Elizabeth (which ſailed from Bombay, in company with the America, Falmouth, and Chatham, the 1ſt of July, 1761, it being then the very height of the SW. monſoon) ſhe pitched fore-caſtle under, and filled both her upper and lower decks with water.

When you have got out of Bombay, employ your utmoſt endeavours to get an offing, taking all advantages of the ſhifts of wind, which you will frequently find to ſhift 2, 3, and ſometimes 4 points at a time, in the ſqualls. This you will have abundance of, with almoſt conſtant rain. By no means be prevailed on to come to an \rightarrow (as we were in the before-mentioned voyage, by the advice of ſome fair-weather navigators, who, I believe, were entirely ignorant of the conſequences of a ſhip's \rightarrow ing in the open ſea; alſo at this ſtormy ſeaſon of the year, where they lay expoſed to the violence of both wind and ſea).

Our

Our ships rolled, laboured, and pitched, in such a manner as I thought would have torn them to pieces. At midnight the Falmouth parted her cable, and stood off to sea: we immediately made the signal to weigh; and it took us from midnight to day-light to purchase our \rightarrow , which we at last did with great difficulty. We \rightarrow ed in 17 fathoms, it being then low water. The intention of our \rightarrow ing was, to prevent the flood (which was then coming on) driving us to the northward.

The tides are not strong in the offing: we tried them every hour, whilst at \rightarrow , and at the very strength of the tide (though it was then spring-tide) it ran but 6 fathoms NEbE. and the ebb much the same, south-westerly.

In your endeavour to get an offing, always observe to stand on that tack you can make most westing of; but at the same time having a strict regard to the tides. If possible, stand on that tack you can best stem the tide on. We always stood to the westward with the ebb, which sets to the southward; and to the southward with the flood, which runs to the northward.

The tides flow on this part of the coast N. and S. (12 hours) at full and change of the moon. After we were to the southward of 17° N. we took no further notice of the tide. The best latitude reckoning to get an offing, is 18° N.

When you have got an offing, and are in 35 or 40 fathoms water, you may steer the along shore course (if the winds will permit) making an allowance of at least $\frac{1}{4}$ or $\frac{1}{2}$ of a point, for the prodigious swell that comes from the WSW. If you can make your course good, SSE. and keep your depth of water, you may depend on that course carrying you clear of all the coast. I am well assured, from my own observation and experience of this coast, that, from the Islands Hunary and Kanary, the coast lies due SSE. and NNW. so that, being 5 leagues off Kanary, a SSE. course will carry you quite clear to Cape Comorin; and you will pass at much the same distance, from every headland all along the coast that you were from Kanary.

Although the wind should favour you (as you will find it to do) as you run along the coast to the southward (and the further you get to the southward, the more will you find the wind favour you) be not covetous to take too great an offing. By no means go out of soundings, but keep in 40, 45, or 50 fathoms, till you get into latitude $12^{\circ}15'$ N. or 12° N. When you stand in toward the land, I will not advise you to come nearer than 16 or 15 fathoms, as the weather is mostly very hazy at this season.

Notwithstanding you have generally a great deal of rain, and thick cloudy weather throughout the whole of this monsoon; for several days toward noon,

we

we had a light of the sun sufficient to get an observation. Thereby we found we had a strong southerly current, which favoured us with 20, 22, and sometimes 26 miles in the 24 hours, more than the run gave. You ought to make this allowance all along the Malabar Coast, at this season of the year, and will find it to answer, whether you have an observation or not.

Being in about the latitude of 12° N. and 45 or 50 fathoms, you may be sure you are within the Laccadive Islands. If you lose soundings on the coast you cannot be so certain whether you are without or within them; and run a great risque of falling in amongst them, if not upon them, as the weather is generally thick and hazy.

Soon after this you lose soundings; for further to the southward there are no soundings at that distance from the shore. You may then with great safety steer SSE. this will carry you clear of the Malabar Coast, and of the Laccadive Islands, to Cape Comorin. You need not now regard your soundings as heretofore; only to have a cast now and then, to satisfy your curiosity, whether you are in soundings or not. There are good and regular soundings all along this coast; only in some places deeper, and others shoaler water.

When you are got as far to the southward as Cape Comorin, and are clear of all the Coast of Malabar, you may steer SEbS. or SE. according as you have the winds, till you are in the latitude of Gaula; and then steer E. for Gaula, commonly called Point de Gall; still making allowance for a southerly current, at the rate of 18 or 20 miles in 24 hours.

We ran for Gaula in the night, (having had a good observation the day before) steering EbN. and EbN $\frac{1}{2}$ N. to make an allowance for the southerly current; and with that course kept in parrallel of Gaula, so as to get soundings in about 40 fathoms; accordingly, at 2 A. M. struck soundings in 42 fathoms; then lay to under top-sails till day-light; then Gaula bore EbS, about 4 leagues; made sail, and coasted it round Ceylon, as usual. By our reckoning we passed about mid-channel between the Malabar Coast and the Laccadive Islands; but by our soundings, much nearer the former, thereby judging ourselves not more than 12 or 14 leagues off the said coast; yet, on our land-fall with Gaula, found our reckonings very exact.

It is remarkable, that as soon as you get about half a degree to the southward of Cape Comorin, you get clear of all the rain, and hazy weather; and have then a fine clear sky, and fair weather: this shews what exact bounds the rains are confined to.

CCXLII. DIRECTIONS for VISIAGAPATAM ROAD.

Pigeon Island (the only island near that coast) lies close in shore. It cannot be distinguished as an island at any distance, but appears in a small round hummock. The coast a-breast the island is an high sand-bank, the easternmost part whereof is full of trees.

When Pigeon Island bears north, distance 6 or 7 miles, the Dolphin's Nose (which is on the westernmost point of Visiagapatam Road) may be distinguished. There is a large mosque on the top of it; but this is not easily seen till you are pretty near, because it stands on the easternmost declivity of the hill.

To \rightarrow in Visiagapatam Road, bring the two high cocoa-nut trees, which grow before the fort, in one; the entrance of the river will be open to you, and in 12 fathoms you have good ground for a large ship (but you must bend your best bower cable, to an \rightarrow of about 16 cwt. otherwise it will be impossible for you to weigh it). Or, bring the mosque NW. or NW $\frac{1}{2}$ W. and \rightarrow in 9 $\frac{1}{2}$ or 10 fathoms.

The bar lies within the Dolphin's Nose.

CCXLIII. DIRECTIONS for Rounding the Reef off POINT PALMIRAS, and so into BALLASORE ROAD by Night or Day. By Captain Jonathan Ranson.

As the mistaking False Point for Point Palmiras, has been several times attended with fatal consequences, either by sailing in among the dangerous reefs to the eastward, or getting embayed in the False Bay, to avoid these, observe as follows.

Between False Point and Point Palmiras, and all over False Bay, you will meet with ouzy ground of a greenish colour; and so soft, that your lead will bury itself every cast. But any where to the northward of Point Palmiras, having the Bay of Ballasore fairly open, you will have stiff ground; namely, blueish clay, with variety of mixtures, as you change your situation (to wit) the above with sand and shells, the same with gravel, with iron stones, rotten stones, and small pebble stones, &c.

Some of these mixtures with clay, you will have all the bay over, which being known, is sufficient to rectify your judgment, whether you are to the northward or southward of Point Palmiras, if you are otherwise doubtful.

Nevertheless, all bound to the Bay, should endeavour to make the land to the southward, about Pondy (the last high land on the coast) or Jagrenat Pagoda: or if the weather should be hazy (as it frequently is in the months of April,

N n

May,

May, and June, so that you cannot make the land) then by your latitude endeavour to get soundings to the southward of False Point, keeping in 16 or 18 fathoms water. You cannot miss the true soundings off False Point (they are coarse sand and gravel stones); whereas by keeping too great an offing you may chance so to do.

The land hereabout is very low, and the False Point (if you see it) has nothing upon it remarkable to know it by, otherwise than its making a point by the land to the northward, trenching away and baying so that you lose sight of it. In False Bay (should you happen to be well in) there are two remarkable sand-hills near together, whereby this bay may be known.

From False Point, to round the reef off Point Palmiras, the course is NEbE. 9 or 10 leagues. In falling off the hard ground of False Point, you will come into soft ouze (as before observed) and with the observed course will hold your depth of water, with little or no variation, till you come upon the reef of Point Palmiras. Your first coming on will be fine light sand, and further on, coarse sand with gravel stones; these are the soundings of the reef. Observe that you will deepen your water in falling off. When this appears evident to you, haul two or three points more to the northward, till you come into stiff ground (to wit) stiff clay, with some small stones, or with sand and shells, as before observed; then you may safely conclude, you have the Bay of Ballasore fairly open off the Point, and may steer in boldly NNW. for the road, having regard to the tides, which flow in the road at 9 o'clock on the full and change; the flood setting in NW. and the ebb SE.

If you round the reef in about 18 fathoms water (which is esteemed best) you will have about 7 or 8 leagues run into 9 fathoms water (there the pilot-shoos generally lie) shoaling very gradually as you run in. You will find the ground as above described, only in 14 fathoms water, the dry sand-bank off the point bearing SW. There is a spot, not always met with, of a bright yellow stiff clay, like oaker, with small pebble-stones; this spot lies rather to the westward of the common track.

Should it so happen (as in some seasons of the year it may) that the pilots have all left the road, and you would send in your boat over the bar of Ballasore, to give notice to the company's factor residing there, of your arrival; run in with your ship into 7 or 6 fathoms water at pleasure (this must be understood at low water, for upon the springs, the tides ebb and flow 11 or 12 feet in the road.) Bring the flag-staff at Buleramgury, or the Bankfall-house, to bear NNW. from you, and there →.

It flows upon the bar on full and change at 10 o'clock, and the sending your boat from the ship should be so timed, that the first quarter flood may be pretty well spent before you get upon the bar, to avoid the breakers, which (upon the first of a flood) sometimes break very high, and are dangerous.

You ought not to forget to put a grapnail in the boat, and a compass, as they may both be useful. Keeping the above Flag-staff NNW. by the compass, will lead you to the outermost beacons, or marks for the channel, which are poles pitched in the ground, on each side, at convenient distances one from another, and will lead you close on board the southernmost point of the opening: there formerly the Old Bankfall-house stood; but the new house stands on the other side, at the bending of the second reach, going up.

In sailing from Madras, for the Bay, any time in the month of June, it will be necessary to time your sailing so as to be in Ballasore Road before the full-moon happens in that month, or else not till the last quarter is over; for in this month you may expect bad weather, which has been experienced never to fail, and has been known some years to hold 3 or 4 days together, very violent and mischievous in its consequences. In the year 1739, when the Revolution Indiaman, with three stout country ships, were lost in the gale, with all their crews, Captain Ranson having the charge of another ship as pilot, at the same time cut from his ∇ s, with 4 feet water in the hold, and put to sea, and by God's providence weathered the storm, with the loss of the mast, ∇ s from the bows, and some of the waste guns, and in 10 days after got safe into Chittigong.

These gales blow always against the monsoon at first, and then commonly back round to the NW. making a confused sea, till it fixes again in the SW. quarter, before it clears up. They generally happen between the full and last quarter of the moon; and to a diligent observer exhibit certain signs of its approaching, sometimes 5 or 6 days before it comes.

If you find the SW. wind, which is that of the monsoon, die away, and have light airs of wind all round the compass, with intermitting calms; the weather more clear than common all round the horizon; objects looming; a murmuring in your rigging like wind, though none perceptible; a more common smooth sea, and cob-webs streaming about your rigging; you may conclude that these are sure prognostics of an approaching gale.

CCXLIV. DIRECTIONS *for SAILING from POINT DE GALL to CAPE COMORIN, or from CAPE COMORIN to POINT DE GALL, in either MONSOON.* By Mr. Nichelson.

Cape Comorin bears from Point de Gall $W 33^{\circ} N$. or $NWbN$. distance 63 or 66 leagues. This bearing and distance you may depend on. I have several times made my course from Gaula $W 30^{\circ} N$. distance 58, 59, or 60 leagues, being in latitude $7^{\circ} 38' N$. and longitude made $2^{\circ} 31' W$. Then I have seen Cape Comorin bearing NNE . or $NEbN$. 5, 6, or 7 leagues; and had soundings from 30 to 35 fathoms. In the SW. monsoon I have made my course from Cape Comorin $E 32^{\circ} S$. distance 59 leagues; and then Point de Gall bore EbS . 4 or 5 leagues; 44 fathoms, coarse sand.

In the NE. monsoon the currents are very uncertain about Point de Gall, and in crossing the Gulf of Manara. They set off Gaula WSW . and in the opening of the Gulf they have often been found to set SW . very strong; so that several ships, in light winds and calms, have been driven suddenly on the Maldivia Islands. To avoid this, I would advise all ships to round the Island Zeloan, at least as far as Caltura (a Dutch fort and settlement about half way between Gaula and Columbo) from whence, and not before, you may safely cross to Cape Comorin. If unexpectedly you should happen to make the land to the eastward of Cape Comorin, avoid coming too near the coast; for it is encompassed with many rocks and dangers.

In the SW. monsoon things are quite reversed: you must therefore take care of the currents, which set strong into the Gulf of Manara; by them many ships have been driven to the northward into the gulf, and with great difficulty and loss of time have got out of the gulf again, not without danger of being lost. The experienced navigator will either way be upon his guard.

These are very necessary cautions to navigators. I never experienced any of these strong currents; nor do I believe any ship, that keeps Zeloan close on board, within 2, 3, or 4 leagues of the shore (until she gets to the northward as far as Caltura) will meet with any of them. I have many times between Gaula and Caltura, had strong northerly currents in my favour; and however strong the current may run to the SW . or WSW . to the southward of Gaula, you lose it all as soon as you get in shore to the northward of Gaula. Ships that do not observe this caution are driven off Zeloan, among the Maldivia Islands, &c.

CCXLV. DIRECTIONS for coasting along ZELOAN, from POINT DE GALL to CALTURA; and crossing from thence to CAPE COMORIN, in the NORTH-EAST MONSOON.

Being 2 or 3 leagues off Point de Gall, with the Haycock and it in one, bearing NbE½E. you will have 30 fathoms. From thence I would advise you to coast it along shore as far as Caltura, (a Dutch settlement, where they have a considerable fort, on a rising ground near the sea) taking care to keep from 2 to 4 or 5 leagues off shore, in depths of water in the day-time, from 44 or 40 to 25 or 20 fathoms. Under that depth I would not advise you to go; for there are several straggling rocks lying 2 or 3 miles off shore, to the northward of Gaula, and between that and Caltura, several of which have 16 or 18 fathoms close to them; and in 25 fathoms you will not be more than 3 miles off shore.

In the night time, I would advise you not to go under 28 or 30 fathoms; for in some places, in that depth, you will not be more than 4 or 5 miles off shore; and (night or day) not to go without 40 or 44 fathoms; for, if so, you will soon be off the bank, and have no soundings. If it should then prove light winds or calm, and the current is southerly, you will be driven back again, or perhaps off the coast; this may be prevented by keeping in the depths above mentioned; there you may ↗ on occasion, and keep what you have got.

As you come near Caltura, you may make bolder with the shore, and stand into 15 or 16 fathoms, clear sandy ground. By standing in shore, in blowing weather, you will find the sea very smooth. I have stood in 13 fathoms, Caltura bearing NNE½E. 4 or 5 miles off shore. I have stood in with the fort, bearing ESE½S. and had from 15 to 10 fathoms, 4 or 5 miles off shore: then the extremes of land to the northward bore north. Off Caltura the variation was 18°E. in 1760. Caltura and the Haycock are in one, bearing SE½E.

I have several times coasted it along this part of Zeloan, and have sometimes found a small southerly current, frequently no current at all; and have found, when it has blown very fresh at N. or NNE. for 24 hours together, a very strong northerly current, with which, by keeping within the depths above mentioned, I have turned it up along shore, and gained a great deal of ground.

From Caltura, in latitude 6° 37' N. and longitude 79° 42' E. from London, you may with safety stretch across the Gulf of Manara for Cape Comorin, which bears from Caltura W 28° N. or WNW½N. distance 54 leagues. I have taken my departure from Caltura, and made my course W 22° N. distance 49 leagues; then

then I have seen the land about Cape Comorin, bearing NNW $\frac{1}{2}$ W. distance 6 or 7 leagues, and had 26 fathoms water.

CCXLVI. DIRECTIONS for Ships bound to the COAST of COROMANDEL, from between MADAGASCAR and the COAST of AFRICA.

Being in latitude 3° 30' N. and longitude E. from Comero Isle 9° 30' with variation 10° 15' W. and bound for the Coast of Coromandel, you direct your course for the Laccadive Islands, through which there are several passages or channels.

As you run to the eastward, the variation will decrease pretty fast; amongst the Laccadive Islands, the variation was 1° 8' W. in the year 1760. By this you may know when you have got the length of them.

In the SW. monsoon, the winds between Cape Basses and the Laccadive Islands blow constantly in the SW. quarter, mostly from WSW. to SSW. and sometimes S. fresh and steady gales. As you come near the islands, you have fresher gales, and squally weather; except it is in the latter end of the season, the end of September, or beginning of October; then near the Laccadive Islands you will find little winds and variable, with squalls and rain.

Between Cape Basses and the Laccadive Islands, there is a constant westwardly current, which is very deceiving, and makes ships much out in their reckonings. Mr. Nichelson's account of this current is as follows:

I have seen an account of the ship Pelham, and another Indiaman, on their voyage to Bombay, who were 1000 miles out in their reckoning. One was carried in sight of the Island Soccatra, and the other in sight of the Coast of Arabia, (by the westwardly current) when by their reckonings they were looking out for the Coast of Malabar: and I have reason to believe (from my own experience, and the journals I have seen) that this current always sets to the westward.

In the SW. monsoon, between the Coast of Malabar and the Laccadive Islands, the current sets to the SSE. (as the coast lies) at the rate of 20, 24, or 26 miles in 24 hours. Among the Laccadive Islands the current sets to the SSW. and SW. at the rate of from 18 to 22 miles in 24 hours; and you have this current about 2° or 3° to the westward of the Laccadive Islands; then the currents set wholly W. or WSW. at the rate of 8 or 10 or 11 miles in 24 hours; and you will frequently find the ship (by observation) 10, 12 or 14 miles to the northward or southward of the reckoning, but mostly to the southward.

It is therefore reasonable to believe, that this current sets mostly to the SW. or WSW. between Cape Basses and the Laccadive Islands, at the rate of 8, 10,

11, or

11, or 12 miles a day, and makes ships so much out in their reckoning.

I therefore recommend the variation to them for their guide, which, if strictly observed, will always correct the reckoning, and particularly in sailing for the Laccadive Islands.

CCXLVII. DIRECTIONS for SAILING toward LAND in the INDIAN OCEAN,
from the NICOBAR ISLANDS.

If you are bound to Bengal in the north-east monsoon, you ought to keep along the Mallye Coast, and go well to the northward before you stretch over, in order to make great allowance for the southerly currents, and the winds, which sometimes hang much to the northward.

If you are bound to the Coast of Coromandel, in the north-east monsoon, you may go through the Sombrere passage, in latitude $7^{\circ} 36' N$, which is a safe and clear passage. I have gone through it in the night, with a squadron of men of war. But go through which passage you will, you ought to shape your course so as to fall in with the land, to the northward of your port, on account of the current running always to the southward. When you come in with the land, you will have the winds mostly from the northward. Should you fall to the southward of your port, you may lose much time, and have much trouble in getting to it, by striving against wind and current.

If you are bound to the Coromandel Coast in the months of March or April, keep well to the southward, and endeavour to fall in with Zeloan, near the Friar's Hood, coasting it along Zeloan to Point Pedra, where you will have variable winds and a strong northerly current in your favour.

If you are bound to the Malabar Coast, in the north-east monsoon, it will be proper to fall in with the Island Zeloan, near the Friar's Hood, or between that and the Basses; but be sure to fall in to the northward of the Basses, and keep the Coast of Zeloan close on board, because the current then sets strong round the island to the southward; and should you be driven off the Coast of Zeloan, you may not be able to regain it. Some ships, by not observing this precaution, have been driven off Zeloan, amongst and through the Maldivia Islands, whereby they have been exposed to great danger and hardships.

The meridian distance between Pulo Rondo and the Great Basses is $11^{\circ} 30'$ and from the southernmost Nicobar, $10^{\circ} 20'$. But trust not too much to your reckoning, because the currents are very deceiving in those seas. I have known ships that have made the land with little more than half the meridian distance.

CCXLVIII. DIRECTIONS for SAILING from the COAST of COROMANDEL to the COAST of MALABAR, MALACCA, BATAVIA, and other Places.

The bad weather, which lasts from April to October, will not permit you to remain there during this interval; but the fine weather opens the trade, and brings ships from all parts of the Indies.

Those who sail from the Coast of Coromandel, Bengal, or any other places more eastwardly, from the beginning of October to January, should (in order to render their passage shorter and safer) make the Island Zeloan, to the northward of the Basses; then keep along the south coast as far as Columbo, from which place cross to Cape Comorin, and make the best of their way for the destined port, observing the following instructions:

If in the months of October and November, you find (to the southward of the Island Zeloan) the winds blow from the W. to NNW. you must turn to windward, making advantage of the currents, which frequently set to the westward very strong. This advantage will be the greater by keeping near the shore.

The time of departing from the Coast of Malabar for that of Coromandel, Bengal, or other places to the eastward, is generally from the month of February to April, keeping along shore as far as Cape Comorin; from thence cross over to Point Gaula, and then direct your course according to the place you are bound for.

Coast the Island Zeloan as far as Point Pedra, if you are bound to the Coast of Coromandel; but if you go directly to Bengal, it is sufficient to coast Zeloan as far as the Basses, from whence you steer to make the Coast of Orixa.

The ships bound to Malacca pass wide of the Basses, and cross the Gulf toward the islands which lie to the northward of Acheen.

The ships bound to Bantam, or Batavia, (when they are at Point Gaula) should cross over to Sumatra, keeping along the islands that lie off it, and then go through the Straits of Sunda.

The time prescribed for ships to sail from the Coast of Malabar to different parts of the Indies, is no way relative to those bound for Europe. The latter should sail in December, or at farthest the middle of January; otherwise they will run the hazard of not doubling the Cape of Good Hope, especially if they are bound first to the Islands of France, or Bourbon.

The best way is to keep along the coast as far as Cape Comorin; then make Point Gaula, and from thence steer SEbS. as far as the equinoctial line, to avoid

avoid the Maldives, allowing for the currents, which set strong to the westward.

It is supposed that a passage may be gained, in case of necessity, from the Coast of Malabar to that of Coromandel, to arrive at the latter end of January. In 1733 and 34, a trial was made of it in the ship *La Galathée*, from the example of the squadron of M. le Baron de Paliere, which succeeded very well, in 1740.

That a passage may be gained this way, is not to be doubted; but care should be taken to provide good groundtackling, and even then to quit this coast before the petty monsoon sets in, which it generally does about the beginning of April; then it is dangerous lying here, as there are no ports for shelter: however, if necessity urges your longer stay, it is best to \rightarrow as far off shore as you conveniently may.

You must sail from Mahe, Callicut, or Cochin, by the middle of December, or sooner, if the place you depart from be more northerly, coasting as far as Cape Comorin, &c. as above directed. You have the winds there at this time of the year from NNE. to ENE. with which winds you must make as much casting as may be necessary.

It is not always needful to make Sumatra, nor to cross the equator. It is sufficient, if, on the contrary tack, you can fetch to windward of your consigned port.

CCXLIX. DIRECTIONS *for SAILING from the COROMANDEL COAST to ACHEEN.*

The time of departing from the Coast of Coromandel to go to Acheen, is generally limited to the middle of August, or at the latest the middle of September.

When you are got out at sea, you have the winds from WSW. to SW. which you must take the advantage of, and make the Island Sumatra in 5° north latitude; that is to say, 5 or 6 leagues to the southward of King's Point, which forms the west side of Acheen Road.

Here you commonly meet with southerly winds, at this time of the year; so that by this means you will be to the windward of the Surat Passage, which though the narrowest, is the best, because you can \rightarrow in it.

This passage (if undertaken at the time prescribed) may be made in 10 days; but if delayed later, the uncertainty of the winds and calms may make it longer.

As to the effect of the currents, on examining several journals of this passage, it is rare to find them set to the northward; but on the contrary, they are often

experienced to set to the southward. Several navigators have found their mistake, by being too confident of the currents setting with the wind. It is safer to compute they set to the eastward; prudence advises to be diffident: either way keep a good look-out in time.

If you make the coast of Sumatra in 4° north latitude, you will see in land several high mountains, and beneath low land, even and very woody, which continues to the shore. Four or five leagues from shore you have 50 fathoms, all the way good \rightarrow ing ground, and no danger about the coast.

In sailing to the northward, in $4^{\circ} 43' N.$ you perceive the mouth of a river, wherein boats may enter; from thence the coast is bordered with many small islands, low and woody, which may be coasted safely. One league and a half off shore you have 26 fathoms, mud. The charts make a bank opposite these islands.

Captain Griffin, of the *Lapwing*, in December, 1764, \rightarrow ed upon this bank in 6 fathoms, and sent his boat to sound all over it. The least water was, mark, under water 3 fathoms, and the most 7 fathoms. There are 17 fathoms both within and without. The length of it is about 1 mile, and its breadth 3 or 4 cables length; lying in latitude $4^{\circ} 55' N.$

About 5 or 6 leagues to the SE. of King's Point, the low land is equally woody, but of less extent; and like that of the high mountains, very uneven and irregular near the shore. The soundings in this part vary continually; in some places it is sand mixed with mud, in others gravel, and sometimes rocks; so that there is no \rightarrow ing here, unless in case of necessity. About 2 leagues from the land you have 35 fathoms.

King's Point (the latitude of which place is $5^{\circ} 32' N.$ as taken by 4 Hadley's quadrants) makes the south side of the Surat Passage. It is not easily known coming from the SE. because at these bearings it appears so contiguous to the islands of Gomez, Nancy, and Brasse, that there is no passage to be seen between them.

In ranging the coast, there is (about 2 leagues to the southward of the Surat Passage) a bight or bay, which you will readily take for a strait: at its SE. point are two rocks above water, on which the sea breaks, and another again within the bay, like a ship at \rightarrow without her masts. In this bay the land is low, stocked with trees, and fine sand along the shore. The breadth of this bay is about a league from one point to the other.

At the foot of the high mountains near Acheen there appears three small hillocks. Half a league off the SE. point of this bay you have 17 fathoms,
fine

fine sand; and a little to the northward, 16 and 15 fathoms: a quarter of a league off the NW. point, there is the same depth at half a gun-shot from the shore. Off this place you may perceive King's Point, which appears like a great steep hill. Pulo Gomez then makes like two paps; its western point is very low, and at the extremity is seen a little island, from whence it breaks above $\frac{1}{2}$ a league, extending to the WSW. and about the same distance WbS. of Pulo Gomez, there is another rock, whereon the sea also breaks very much. It is dangerous going between these two, as in all probability there is a communication from one to the other. To avoid these dangers, keep King's Point (which is safe) close on board, in 12 and 14 fathoms, red sand; and when you have doubled this point, the opening of the passage discovers itself. Continue on the starboard side till you are got to the narrowest part; then keep mid-channel without fear, and you will soon be through.

In case of meeting with a contrary wind, you had best \rightarrow under King's Point; and wait till the flood has made, which sets NEbE. and the ebb SWbW. At about $\frac{1}{2}$ flood, weigh and lay the ship's head to the northward so you will have the tide under your lee bow: thus by backing and filling, you may not only get through the Surat Passage very safely, but to the \rightarrow ing place. In the Lapwing, December 1764, the captain nor any of his officers having been here before, and no caution given in the former editions in case of contrary winds, they laid the ship's head to the southward. As soon as they had got clear through the passage, they met with such a confused sea, occasioned by the meeting of several tides from the different passages, that it broke through the cabin windows, and over the deck fore and aft, and the vessel lost all command of the helm. They were forced to put back again, and wait for the next flood. In the mean time Captain Griffin went in the boat to discover the cause, and when he made sail next, he laid the ship's head to the northward; by which means they got to the \rightarrow ing place without the least difficulty or danger.

You sometimes meet with a contrary tide, which sets very strong out of the Bay of Acheen; if you have not wind enough to stem it, \rightarrow (till it has slackened) before you get to the entrance.

From Surat Passage the course is EbN. 2 leagues to the \rightarrow age of Acheen. About $\frac{1}{2}$ a league from the Coast of Sumatra there is a little island, surrounded with breakers. You may \rightarrow before the river in what depth you please. There are always some ships in this road, therefore there is no occasion for more particular

cular directions. Half a league off shore you have 12 fathoms, and 7 fathoms about $\frac{1}{4}$ of a league.

The second passage to enter Acheen Bay, is that of Sedre. The Island Nancy makes the north side of it; Pulo Gomez and Stone Island, the south. Through the Surat passage is preferable, this however is less to be feared than some charts represent. There is nothing dangerous but the rocky bank that extends WSW. from Pulo Gomez above mentioned, and another from Pulo Nancy about mid-channel. There is also the rock before-mentioned bearing WbS. from Pulo Gomez.

It has been said, that no accident ever happened to any ship sailing through the Surat Passage; though several navigators have questioned this, on account of its being so very narrow, and have rather chose to sail to the northward of Pulo Brasse, through the Bengal Passage, between Pulo Vay, (or Way) and Brasse and Nancy. This latter, which is 4 leagues wide, would be preferable to either of the other two, if from thence there was an easy passage to the Road of Acheen; but the winds (which generally blow between SSW. and S.) do not always permit it; and there is no \rightarrow ing there (on account of its great depth) if a calm should happen, you are tossed about by the currents (which set to the N. eastward) and run a risque of not reaching Acheen. If you do reach Acheen, it is not without much difficulty: several ships having been horsed near Pulo Way (where there is no \rightarrow age) have been obliged to sail round about, and re-enter at the Malacca Passage, after more than 15 days hindrance.

Frequent examples of the like inconveniences deserve the regard of those who have the charge of ships, and should determine them always to prefer the most experienced method, and not give way to chimerical fears.

The third passage to Acheen is that of Malacca, so called because the ships which go from Acheen to Malacca generally pass through it. This passage is bounded on the NW. by the south Point of Pulo Way, and on the SE. by that of Sumatra. You find here a little round island (Pulo Bouro, or Malora) or rock above water; but it is steep-to, and the passage steep on all sides. It is 3 leagues NE. from Acheen Road.

NNW. 3 leagues from the NW. part of Pulo Way, there is an island called Pulo Ronde (or Roundo) on account of its form, and within $\frac{1}{4}$ of a league to the southward thereof are 7 or 8 great rocks above water. To the northward of Pulo Brasse are also 3 little islands, the outermost of which is above $\frac{1}{4}$ a league therefrom.

The trade of Acheen is very considerable ; ships come hither from most parts of the Indies, particularly on account of the gold, whereof they procure great quantities : the hazard of being paid is the only difficulty of this traffick. The town is situate upon a low ground, which continues from the foot of the mountains that are seen in land. Acheen River passes through this plain, and makes thereof several islands. In the rainy seasons the low lands are almost all overflowed. The principal entrance of the river has a bar, over which small vessels of about 25 or 30 tons may pass at high water ; but at low water a boat or canoe can scarcely get over. The Portuguese and English had each of them formerly a settlement at Acheen, which the perverse behaviour of the inhabitants caused them to forsake.

The sea rises and falls 7 feet in the road, and it is high water at 9 o'clock on the full and change ; but the sea breezes and rains make considerable alterations, and render this rule sometimes invalid. You are here sheltered from the westerly monsoon, which is the strongest, and blows from April to November ; then the eastern monsoon sets in, and brings with it more moderate winds, except those now and then from the NW. which blow very violently, and oblige the ships to have good \rightarrow s and cables to withstand their force.

The inland parts of Sumatra hereabout are very mountainous, among which is one very high, and may be seen 20 leagues at sea ; it is called Queen's Mountain, and by the English Golden Mountain.

The ships bound for Europe (which on their return from Acheen are to touch on the Coast of Coromandel) should depart hence by the 20th or 22d of December, in order to arrive there at the beginning of January. Having made sail to go through the Bengal Passage, they shape a course toward Nicobar Island, which lies NWbW. of Pulo Roundo, distant 28 leagues.

This island may be seen 10 leagues at sea, though its south point is low. There is no occasion to go through St. George's Channel ; it is sufficient to go to the southward thereof, and when you have passed it, keep on your proper course to bring you to your consigned port. It must be observed to make the land at this season to the northward of the port, in order to get thither the easier and sooner. You must also have regard to the currents setting to the westward, which otherwise may occasion your falling in with the land sooner than you are aware of.

For ships whose business detains them longer at Acheen, and which seldom sail sooner than March or April, the course is different. The S. and SSW. winds, which blow then in the Bay of Bengal, and the currents, which e. to the

the northward, require them to make the land to the southward of the place they are bound for.

CCL. DIRECTIONS for SAILING to different Places near the GULF of BENGAL, at different Seasons of the Year.

The most favourable times for ships to sail in the Gulf of Bengal, are from the end of February to the middle of September; but as navigators (in order to shape their course for a good landfall) should be mindful of the winds and currents, which prevail in the Gulf during this period, it will be necessary to give some instructions relative to the variety of both, in the different months of the year.

If you sail from the Coast of Coromandel, for the Coast of Bengal, toward the end of February, and during the current of the month of March, it is necessary to keep a good offing, in order to reap the advantage of the S. SSW. winds that blow here (whereas near the coast they often vary from NE. to SE.) then shape your course to make the Coast of Orixá, in about the latitude of 19° N. and coast it thence to Point Palmiras.

The ships that sail in this season, from the Coast of Malabar for Bengal, without touching at any place on the Coast of Coromandel, ought to keep the Island Zeloan on board, as far as Batacalo, and thence make a stretch to the Coast of Orixá as above.

During the months of April and May, (when the winds blow more frequently from the southward, and are in their full force) you must, in like manner, make the Coast of Orixá; guarding particularly against the currents, which set to the NE. or northward, and keep a good offing, as soon as you experience them; because with the SE. winds you will be troubled to clear the coast, if you follow the different bights which it makes.

When you see the Pagoda of Jagrenat, keep in from 15 to 20 fathoms, as far as the bank of Point Palmiras, to which you must come no nearer than 18 fathoms.

As the westerly monsoon is in its height in June, July, and August, it is necessary to keep more to the windward than in the preceding months; that is to say, to make the coast in latitude $18^{\circ} 30'$ N. This precaution is the more necessary, as you may be often mistaken in the estimation of your course by the currents, which generally are governed by the direction and force of the winds. This is the reason that ships fall in with the land more easterly than they imagine.

When

When you are within sight of land, keep in between 12 and 16 fathoms; and for the rest conform to the directions above, particularly concerning the bank off Point Palmiras, which you must then keep well aboard.

The course which ships ought to make, that sail from the Coast of Coromandel after the middle of September, and in October, is very different from the preceding; because the westerly monsoon then draws toward a conclusion, and the winds frequently blow from the NE. therefore, instead of making the land to the southward of False Point, you must at least keep out in the middle of the bay, so as to be able to weather Point Palmiras: nor will this always suffice; for the nearer the time of the monsoon's change, the more you must guard against it.

The vessels that can make the Coast of Arrakan, by help of the varying of the winds, are much more sure of saving their passage than those who neglect it, and think it sufficient to keep mid-channel.

If by neglect, or any unforeseen accident, you fall in with the land to the southward of False Point, you risque the loss of your passage, or at least a considerable delay (for want of favourable winds to get to the northward) and stem the violent currents, which set SW. from the latter end of September till the month of February; but their greatest force and rapidity is in November and December, when they run 3 miles an hour.

The ships which fall in to the northward of False Point (if they would double that of Point Palmiras) must take advantage of the tides, by \rightarrow ing when they make against them.

If you sail from Mergui for Bengal, toward the end of October, you must tide along the Coast of Tenasserim, but no farther than latitude 15° N. or at most latitude $15^{\circ} 10'$ N. (on account of the banks in the bight of Martaban, which are exceeding dangerous, because they are dry in many places, and the tides there, which are very violent and terrible, rising 10 feet at once, in a bohr).

Having got into this latitude, you shape your course WbN. to fall in with the Coast of Pegu to the eastward of Negraile, (or Cape Negrais) but come no nearer the banks that surround it than 7 or 8 fathoms. The lands are extremely low: you can only distinguish the trees, without any mark in particular: for this reason, in hazy weather, it is necessary to keep the lead constantly going.

From hence direct your course to sail $1 \frac{1}{2}$ league wide of Diamond Island, on account of a rocky bank, which breaks at low water, and projects one league to the southward of this island. In this track you will have 8, 9, 10, and 11 fathoms, muddy ground. At Diamond Island is great plenty of turtle; many of them are 400 or 500 pounds weight.

About

About 5 leagues SSW. of Diamond Island is a rocky bank, called Negada, or Neijada, or Lequads (it is one with Diamond Island, and the Little Negrais, when they bear NNE. and SSW.) or the Sunken Island, a little above water. Half-way between these they say there is a rock on which are 20 feet water, at least sometimes. The ship *Le Castricon* saw it in 1698; and others report, that sailing in 11 fathoms water, they perceived its breakers very near. This circumstance proves there is less water on this rock, and that every ship should carefully avoid it. The surest method is not to exceed 10 fathoms in passing Diamond Island.

Having doubled Diamond Island, you steer for the south point of the great Negraile Island, which is remarkable for a great rock, rising above water, very near it; and an hill, on which is a pagoda. Then you keep the wind, to coast the west side of this island, which lies NbW $\frac{1}{2}$ W. taking care of a bank, close to which are 4 fathoms water: its western extremity lies WNW. 3 miles off the south point above-mentioned. The west Coast of Negraile is of a moderate height, rugged at top, and may be seen 9 or 10 leagues. There are along this coast several small islands.

The depth from the south end; as far as 5 leagues more northerly, is 45 fathoms, 4 leagues off shore, and 12 fathoms a league off. Toward the north end there are no soundings 4 or 5 leagues off; but 2 or 3 leagues off you have 40 fathoms.

Leaving Negraile Island, you continue to stand to the northward, in sight of the Coast of Ava; off which are many islands, and some dangerous, which are said to be all visible. The most dangerous of these islands is in latitude $17^{\circ} 6'N$. 5 leagues from the main land. It is a little low island, surrounded with rocks under water for $1\frac{1}{2}$ league off, and is called the Buffalo.

Twenty-five leagues more northerly, in latitude $18^{\circ} 20'N$. is another island, surrounded with rocks for half a league round. It is 5 leagues SbW from the Island of Cheduba.

The Island Cheduba, situated in latitude $18^{\circ} 45'N$. extends 7 leagues NbW. and SbE. At a distance it appears like a cluster of little islands, on account of its ruggedness. From each end projects a reef, $1\frac{1}{2}$ league north and south; and as you pass it $\frac{1}{2}$ a league distance, you see a little island about the middle of it.

From Negraile Island to that of Cheduba, the Coast of Ava has no soundings off it; therefore you should avoid coming too near it in the night, for fear of the dangers about it. This advice is chiefly to those who depend too much upon the estimation of the distance.

When

When you have got the height of Cheduba Island, and about 8 or 9 leagues to the westward, you should steer NW. till you get into 50 fathoms, mud; which is generally met with in 40 or 45 leagues, on this point of the compass. Thence steer WNW. and WbN. to get soundings on the foot of the Ganges banks. You may near them in 12 fathoms. They are easily known when you are near them, by the soundings which are hard sand. You find no mud, but at the entrance of the several channels, which are formed by these banks.

Keep in the depth above mentioned, not exceeding 15 fathoms; this will carry you to Ballasore Road.

There can be no direct course pointed out from the foot of the Ganges banks to this road, on account of the tides off the different mouths of the Ganges. The best method is to keep the lead constantly going.

It is not always sufficient to sail to the height of Cheduba island to cross from the eastern coast of the Gulf to Ballasore Road; for you sometimes (in this season) meet with variable winds from NE. to NNW. and with these winds you cannot make the course above mentioned. In this case, (to render the passage more certain) you must work to the northward, till you are in sight of the Broken Island, which forms the south point of the river Arrakan, from whence, with more certainty, you may cross, and get soundings off the Ganges as above; only observe, that after passing Cheduba the tides of the Arrakan River have an effect.

Ships bound from China, Manilla, or any other part to the eastward (in passing the Straits of Malacca, during the NE. monsoon) must keep as far to the northward as possible, along the Coasts of Queda and Tenasserim, in order to make Negraile; and thence direct their course as in the preceding directions.

CCLI. DIRECTIONS for SAILING from the COROMANDEL COAST to MERGUI, from the Beginning of AUGUST to the Middle of SEPTEMBER.

In sailing from Pondicherry, Madras, or any other part of the Coast of Coromandel, to Mergui, it is proper to shape your course according to the time of the year. Without this precaution you run a risque of losing your passage, or at least of meeting with great difficulties from the winds and currents: therefore, these directions are divided into two parts, on account of the monsoons, which give occasion for this distinction.

The winds (which, from the beginning of August to the middle of September,

P p

blow

blow from W. to SSW.) oblige you to direct your course to the southward of the Little Andaman, (or southernmost part of the Little Andaman Islands; there being several encompassed with a bank, that go under that denomination) and to get in time into latitude $10^{\circ} 10' N.$ or $10^{\circ} 15' N.$ If you pass this channel in that latitude, you must look out for the said island, and then direct your course with more certainty toward the east coast, endeavouring to make the Tores Islands, situate 20 leagues SWbS. from that of Tenasserim. In the charts, the outermost bears but SSW. and the distance not above 15 leagues; so that, if this bearing is truest, either the Tores Islands should be laid down further to the westward, or that of Tenasserim more to the eastward.

It is very rare, at this time of the year, to find a difference to the westward; yet it is prudent, when you have not seen the Little Andaman, to run 30 leagues to the eastward of its computed distance, before you stand to the northward, lest by some unforeseen mistake you run upon this island in the night-time, when you reckon yourself past it. You may also go through the Sombrere channel; but you will be enough to windward in passing that of 10° .

In crossing from the Little Andaman, or the islands to the northward of the Sombrere channel, to the coast of Tenasserim, you sometimes arrive there sooner than you expect, by means of the currents which run to the NE. but, as you have soundings 12 or 14 leagues off these islands along the Coast of Tenasserim, it is easy to prevent the sad consequences that may happen by these errors in the night time.

All the islands of this Archipelago are very high, and may be seen in fine weather 14 or 15 leagues. That of Tenasserim (which you endeavour to make) when in latitude $12^{\circ} 30' N.$ appears, at first sight, in several hillocks like islands, by reason of its unevenness; but on approaching it, they are seen to join. To the northward and southward are several other islands of different sizes; but the most remarkable (and which makes Tenasserim easily known) is a round little island, high and steep, called the Western Canister, about 2 or 3 leagues to the north-westward.

The resemblance of this little island to a canister inverted, which is a kind of round basket, is the reason of its being called by a name common to all those which are thus shaped.

NE. E. from this last you see the island Cabossa, which is of a middling size, extending from E. to W. It is the height of those round it, but not so regular as that of Tenasserim. The Island Cabossa has a little island or rock to the northward of it. It may be easily known coming from the southward,

ward, as there is no other to the northward, but seems to terminate this range of islands.

Having got sight of this last, you may pass it either to the northward or southward, leaving the Western Canister on the starboard side: standing to the eastward, in soundings from 30 to 35 fathoms. There are many islands of different sizes round about, which are but imperfectly known.

When you are between these islands you must regard the tides, which flow at 7 $\frac{1}{2}$ hours (at the full and change of the moon) off Cabossa; but are very irregular making their way through the different passages formed by these islands. It is therefore necessary to \rightarrow while they are unfavourable.

As soon as you have passed Cabossa, you may perceive (at 8 or 9 leagues distance) a small island almost round, called the Little Canister; it is high, steep, and covered with trees, and very much like the Western Canister above mentioned. The difference between them is, that the north end of the Western Canister slopes more gradually than the southern one, and forms a sort of snout; instead of which the south side of the Little Canister is different, as appears by the draught.

You may sail either to the northward or southward of it, at what distance you think proper (for this island is very bold and safe all round) then steer between the island Tavay and Iron Island. The breadth of this channel is about 2 leagues, clear of danger. You cannot \rightarrow there safely on any emergency, having 60 or 80 fathoms, rocky ground. The ship *Penthievre* 1740, coming out of this passage, \rightarrow ed about mid-channel, in 60 fathoms, the tide of flood coming in with great rapidity, and after veering about two-thirds of the cable, sounded again in 80 fathoms. Providentially the winds, though too weak to resist the tide, were favourable, and gave an opportunity to oppose the sails against the stream; by this means the \rightarrow (relieved from a considerable part of its stress) remained fast, 'till the ebb made, and delivered the ship from a bad passage.

Either in coming in or going out, take care to \rightarrow till the tides turn in your favour, according to which you are going. This may greatly assist you.

From Cabossa Island to about $\frac{3}{4}$ of a league to the southward of the Little Canister, the depth diminishes gradually from 35 to 24 fathoms; but increases afterward in the channel above-mentioned.

When the SW. part of Iron Island bears SEbE. and the Little Canister WNW. 2 leagues, you will find 35 fathoms, small gravel mixed with mud. This is the last convenient \rightarrow age to the westward, going through the passage between Tavay and Iron Island.

About 2 leagues N¹W. of the Little Canister, lies an island of a middling size, called the Great Canister. The land is high, and very irregular.

The south part of Tavay Island is formed by several little islands and rocks, steep to, and separated by very small channels. The north part of Iron Island (which bears S¹E. from this last) terminates also in a point, with rocks above water. You find at the foot of these rocks from 25 to 30 fathoms water. The tides meeting hereabout, occasion eddies and whirlpools, which have different directions. It is said, that the flood runs to the northward, and the ebb southward. The best course seems to be at an equal distance from either shore.

From hence Long Island bears EbS. extending from north to south, along the edge of a bank of rocks under water; the Coast of Tenasserim, from the mouth of Tavay river to that of Mergui, is encompassed by such.

Instead of nearing this island, you must (as soon as you have doubled the north point of Iron Island) steer along its east coast, at about 2 miles distance. In this channel you have 40, 25, 20, and 17 fathoms, sand and mud, as far as the entrance of King's-Island Bay, which lieth to the SSE.

This bay is formed by the eastern coast of the island of this name, and the western coast of Fig, or Plantain Island. Here the French company's ships generally winter, unless particular business obliges them to \rightarrow in 7 fathoms, without the bar of Mergui, 6 or 7 leagues to the south-eastward of this place.

One league NNE. from that point of King's Island which forms the entrance of the bay, is a shoal, on which the Lys touched in 1724.

This passage has the same defect as the other, having no \rightarrow age but in very deep water. Prudence suggests to avoid it, 'till the tide favours your getting through. When you come from the Island of Cabossa, if the tides fail, \rightarrow as near to Iron Island as convenient, to wait the beginning of the next flood.

From this last \rightarrow age get into the channel, and keep nearer Iron Island than King's Island, till you are past the islands and rocks to the northward of this last (the outermost island being very low, with a dangerous shelf) then leave Iron island to round that of King's Island.

This passage is longer, east and west, than that to the northward of Iron Island, whose extent is not so perceivable, because that part of the island terminates in a point, whereas the southernmost part is about $\frac{1}{2}$ of a league broad. You generally have calms to leeward of this island, during which you are exposed to the tides, which do not set always alike. Some ships have been driven within a stone's throw of Iron Island, and then back again to and fro, by these eddies; and although the coast is very bold, even at this distance, there are bad consequences

to

to be feared. Upon the whole, the preference should be given to the north channel before-mentioned.

CCLII. DIRECTIONS for SAILING into, and coming out of, the BAY of KING's ISLAND.

As the going into this bay chiefly depends upon the situation of the Lys Shoal, for the better understanding thereof it is necessary to refer to the view of this bay in the chart of these islands.

The Lys Shoal is a little chain of rocks under water, extending about a cable's length ESE. and WNW. Its summit, which is the only danger, bears NNE. of the point A, (the north-easternmost side of King's Island) which is on the west side of the bay. It is half a league distant from the nearest land E. The sounding upon the shoalest part is 19 feet, at high water; and only 9 feet at low water. At the same time the point A, and the Island B, were in one; and the Island D, called Panella, in one with F, the highest part of the NW. point of Fig Island.

On the west side; the northernmost of the little islands between Iron Island and King's Island was open, about the width of a ship's course from the north point of King's Island. Sailing from the shoalest part towards A, gave 6, 7, 10 and 12 fathoms; and to the northward 7, 10 and 15 fathoms. Again, toward Fig Island the depth increased gradually from 6 to 7, and from 7 to 9 fathoms; rocky ground for about a cable's length of Panella Island, which is a little rock on a bank of sand. On this Panella Isle is a cluster of trees, lying about a gun-shot from the NW. point of Fig Island, with which, at a distance, it appears confounded. To the eastward (almost joining to this rock) is another sand-bank; and to the SW. extends a reef of rocks, part of which only appear at low water.

To enter King's-Island Bay, whether from the northward or westward, you must leave the north part of King's Island a league to the southward, and stand to the eastward till you have opened the bay (as it appears in the draught above referred to) and can see the island B, and C, at the farther end of the bay; then you may enter, leaving the Lys Shoal on the starboard, and Panella on the larboard. You may pass this last safely, provided care be taken of the reef of rocks above-mentioned, which extends to the SW. toward the bay. This care is the more requisite, as the reef seldom breaks, and as you risque (by the turn of the tides) being horsed upon the rocks very fast; nevertheless, as the passage between them is wide enough, you may very well keep clear of it.

As

As soon as you find you have passed the Lys Shoal, steer westward, and \rightarrow under King's Island, opposite a bay, into which runs a stream of exceeding good water. The marks of this \rightarrow age are, 1st, The point of King's Island (which makes the entrance of the bay) N. or NbW. half a league. 2dly, The NW. point of Fig Island E $\frac{1}{2}$ S. 3dly, Long Island, NbE $\frac{1}{2}$ E.

The sea rises and falls here 10 feet, and it is high water about $\frac{1}{2}$ past 9 o'clock at the full and change. This is (as most of these islands are) inhabited. Here is plenty of wood proper for ship-building; likewise, a number of tigers and snakes.

This bay is not very deep to the southward of the \rightarrow age. There is a little channel, separating King's Island from that of Fig-tree, which is only passable for country boats.

If by contrary winds, or change of the tides, you are obliged to enter King's Island Bay, through the channel, between the point A, and the Lys Shoal (which at most is but half a league wide) you must keep along shore at about $\frac{1}{2}$ or $\frac{1}{4}$ of a mile distance from it; and take special care not to open the bay, till you are about this distance from it; because, if you approach King's Island with the point A, and Island B, in one, you run direct on the shoal; but it is necessary that the island C be shut in by the point A, till you are within the above distance from the land E; then you may coast it along King's Island, and to the \rightarrow age.

To go out of the bay of King's Island, the best track is to keep mid-channel, between the NE. point of King's Island and Panella, without borrowing from the west, till you have passed the shoal, which you may be assured of when you have opened the second little island or rock, between King's Island and Iron Island.

If you are obliged to go out by the little passage, you must keep along King's Island, rounding the point which forms the bay, at about $\frac{1}{2}$ a mile distance, and not toward Iron Island, till the island C is quite shut in by the point A.

CCLIII. DIRECTIONS for SAILING to and from MERGUI.

When you are off King's-Island Bay, and would \rightarrow before Mergui River, in 6 $\frac{1}{2}$ fathoms at low water, you must shape your course to sail about a league clear of the NE. point of Fig Island; and having passed it, if you would keep mid-channel, in sailing toward the Island Madramacan (which you will see to the SSE.) you must mind to keep the Little Canister open with the south point of

Iron

Iron Island, and almost shut in by the north part of Fig Island. You find the bottom mud in 15, 13, 12, 9, and 8 fathoms. The best \rightarrow age for large ships is in 9 fathoms at high water, and 6 at low.

The bearings at this place, are, 1st, The north point of Fig Island in one with the south part of the Little Canister; and the south point of Iron Island NW open about 10° from the Little Canister; 2^{dly}, The northernmost part of Madaniacan Island, which makes the starboard side, going into the river of Mergui, $S3^{\circ}E$. 14 league; 3^{dly}, The larboard point of Mergui River SbE . 2 leagues. The tides flow here almost north and south; or it is high water at near noon, on the full and change days; then the water rises 15 feet.

It is reckoned about 2 leagues from this road to Mergui (a sea-port town, under the dominion of the king of Siam). Middling vessels can go up the river, taking the pilots of the place to pass the bar, and \rightarrow before the town in 5 fathoms water.

At Mergui you meet with all necessary refreshments, except oxen, which the inhabitants dare not sell, since the Metempsychosis has been introduced there, and made a law. The Metempsychosis is the Pythagorean opinion of the transmigration of souls, which being adopted by the state as a law, it is the reason why the sale of these animals is prohibited, lest the soul of a relation be incorporated therein. The chief trade consists in elephants teeth, calin (pewter, or tutenague) and rice, which they export to several parts of India.

Although idolatry is the established religion here, the Christians have permission to profess their religion publicly, and have a church supplied by a priest of the foreign missionaries, under the title of Apostolical Vicar. This curacy, like all the missions in the kingdom of Siam, belongs to this community, who have a seminary in the capital.

At Mergui are many Mahometans, who are the principal traders of it, and have several ships which they send to different parts of the Indies.

The French had formerly a settlement in this port; there are still the remains of their fort to be seen.

When you sail from the road without the bar, you must follow the same instructions given to sail thither; namely, Steer with the Little Canister just open for the north point of Fig Island; then coast this latter at $\frac{2}{3}$ of a league distance, and thence sail toward Iron Island, keeping the Little Canister somewhat separate from its south point. This will bring you safe, opposite to King's-Island Bay, from whence you may go out, either to the northward or southward of Iron Island, as shall be most convenient.

All that hath been hitherto said, supposes a leading gale; when it is the contrary (whether sailing in or out, or to make advantage of the tides) you are obliged to \rightarrow . You must have new marks to proportion the courses to the different breadths of the channel, in order to avoid the rocks on both sides, as follows:

From athwart the Bay of King's Island, as far as the Little Island, about half way from thence to Mergui, you may stand to the northward, till you see the south point of Iron Island in one with the middle of the Little Canister, and to the southward till within $\frac{1}{4}$ of a league from the land of Fig Island, taking care not to be entangled among the islands.

When you have passed the little island above-mentioned, between it and Madramacan you may stand to the northward, till the south part of Iron Island adjoins to the Little Canister; but the most certain mark is to leave a small space between them. Without this observation, you inevitably run foul of the banks off the Coast of Tenasserim, as happened to the ship *Le Lys*, which narrowly escaped being lost here in 1730.

In standing to the southward, take care to put about before the north point of Fig Island is in one with the south point of Iron Island, leaving between them at least the breadth of a ship's course, in order to avoid a bank which projects on this side the Island Madramacan.

CCLIV. DIRECTIONS for SAILING from the COROMANDEL COAST to MERGUI and JUNK-SEILON, in the NORTH-EAST MONSOON.

The best advice that navigators can take, who sail after the middle of September from Pondicherry, or Madras, for Mergui, is to prefer the channels to the northward of the Andamans rather than the southern ones. The example of some ships succeeding by the latter, ought not to be depended upon always; for by so doing you expose yourself (if the passage is a little long) to the NE. winds, which will prevent your getting to windward of Mergui. Several ships have found themselves in this plight; and having in vain strove against the winds and currents, have been obliged to winter at Junk-Seilon, or Jan-Celon. To avoid the like inconveniency, shape your course between the Cocos Islands and the north point of the Great Andaman, or between the former and the Preparis, whose extent and latitude are determined.

When you are between these islands, if the winds are westerly, you may safely steer for the Island Cabossa.

Twenty-five leagues EbS. of the north point of the Great Andaman, or 22 leagues SE. of the Cocos Islands, in latitude $13^{\circ} 19' N$. you see the island Narcondam; high, and perceptible 18 leagues at sea. On approaching it, you perceive a little rock, joining almost its south point, and another larger on the east side. This island, in consideration of its small extent, is, as one may say, but a high rock; but appeared safe to those who have been near it.

In the Boscawen, Captain Morris, at the beginning of the year 1763, had sight of this island, Barren Island, and the northern part of the Great Andaman, at the same time; and saw one and another of them for 5 or 6 days successively; particularly the Island Narcondam bore E $\frac{1}{2}$ S. when the northern part of the Great Andaman bore N $\frac{1}{2}$ W. from the said ship's journal: the latitude of the Island Narcondam is $13^{\circ} 25' N$. and the north end of the Great Andaman is $13^{\circ} 35' N$. When the Island Narcondam bore NE. and the north end of the Great Andaman WbN $\frac{1}{2}$ N. Barren Island bore SbE. 7 leagues. The variation hereabout was between $30'$ and $40' W$. The westernmost, which is the southernmost of the Cocos Islands, lies in latitude $14^{\circ} 1' N$.

From Narcondam Island to that of Caboffa (the westernmost of the Archipelago of Mergui) the course is EbS. distance 67 leagues. As soon as you have lost sight of the former, you get soundings on the Coast of Tenasserim, in 60 fathoms. As soon as you have made the Island Caboffa, you may conform yourself to the foregoing directions for sailing to Mergui.

When you are within sight of the Cocos, Andaman, or Preparis Islands, if the winds blow northerly, the surest way not to miss Mergui is to make the Moscos Islands, in latitude $13^{\circ} 40' N$. They may be seen 10 or 12 leagues at sea. The southernmost bears WNW. of Tavay Point, which forms the west side of the river so called. From this point the coast (which extends north as far as latitude $15^{\circ} 30' N$.) is bordered with islands pretty clear of danger; and where (it is said) are convenient places for \rightarrow ing. The southernmost are those of Moscos above-mentioned.

South by east of these islands, in latitude $13^{\circ} 6' N$. lies the north point of Tavay Island, between which and the continent there is an exceeding fine channel, through which you may sail to go to Mergui. It is surrounded on the east side by a bank, the edge whereof lies north and south, encompassing all this part of the coast of Tenasserim, as far as the river Calouan near Mergui.

When you have brought the Moscos Islands to bear north, and are desirous of passing this channel, steer SbE. in soundings of mud, and the depth unequal, as 35, 30, 25, 20, and 15 fathoms, then 35 and 25, to within $1\frac{1}{2}$ league of the

north point of Tavay Island. It is best to keep nearer the east coast of this island than the bank above-mentioned, because there is less water about it.

On the side of Tavay Island are four little isles, which you may coast, leaving them on the starboard. You have from 30 to 25 fathoms between the north point of Tavay Island and the rocks; but this depth decreases, after they are passed. The tides flow here SE. and NW. or at 9 o'clock, at full and change; the flood to the southward, and the ebb to the northward. The sea rises and falls here 3 fathoms.

The south part of Tavay is a number of islands, separated by small channels or arms of the sea, which are imperceptible in coming from the northward; so that it appears contiguous and united. On the east side is a little round island, called the Canister of the Bank, which points out the brink thereof on that side, like as Long Island does about 2 leagues to the southward.

Off this latter you may see King's Island Bay to the southward, toward which you must sail, conforming to the foregoing directions, whether you would go into it, or ∇ before Mergui River.

If, coming to the northward, you pass to the westward of Tavay Island (between several great steep rocks, situate along this coast, and the Island the Great Canister) from hence direct your course between the north point of Iron Island, and the south Point of Tavay, as before directed.

If you pass the NE. monsoon at Mergui (on account of its being too early for the Coast of Coromandel) your departure should be made about the 15th or 20th of December, in order to arrive there about the beginning of January; then that coast is safe.

It has been shewn, in the preceding instructions, what course you must take from the Road of Mergui, or from the Bay of King's Island, to the different passages through which you must go out of this archipelago.

If you sail whilst the NE. monsoon is in its height, direct your course from the Island Caboffa to pass between the Islands Preparis and Cocos, or between the last and the north point of the Great Andaman; from thence you may sail to the Coast of Coromandel, with this observation, always to make the land to the northward of the place bound to. This precaution is the more necessary, because, if you fall in to the southward, you will find it difficult beating up against winds and currents, which are then contrary.

It sometimes happens, that the ships trading to Mergui are not always ready to sail in January; if necessity obliges them to stay till the middle of February, it will be best going through the channel to the southward of the Little Andaman, making

making advantage of the southerly winds, which at this time blow out in the Bay of Bengal more than the northerly ones.

The whole coast of Tenasserim, from Mergui as far as latitude $10^{\circ} 50' N.$ is encompassed with a number of islands of different sizes, which form several channels, that are only passable by the small country ships; and 6 or 7 leagues to the southward of Mergui is another mouth of Tenasserim river, from whence to the southward the coast is begirt with a bank, containing many little islands, between which the small country vessels go to Bangry and Junk-Seilon. The largest and most considerable of these islands is called Omell, extending 9 leagues from north to south, the NE. part whereof nearly adjoins to the above-mentioned bank.

Beyond Omell Island they say the coast is navigable, even for large ships, as far as Junk-Seilon, provided care be taken of a bank, situate between the continent and the bordering islands. Although this bank be 3 leagues distant from the former, and thereby affords a good passage between them, it seems better to sail without all, where every danger is avoided.

The body of Junk-Seilon Island lies in latitude $8^{\circ} 15' N.$ its shape is irregular; extending from north to south about 18 leagues. On the east side of it are very good harbours which you may safely put into; food and refreshment being very plentiful, and the inhabitants sociable.

About 45 leagues SE. of Junk-Seilon, you find the port of Quedah: there is a trade for calin, or tutenague, and elephants' teeth, to export to different parts of the Indies.

CCLV. DIRECTIONS *for SAILING from MADRAS to PEGU in the LITTLE and GREAT MONSOONS.*

If you sail from Fort St. George for Pegu in the Little Monsoon, (that is, by the 25th of April) it is convenient to keep well to the southward, because at the last full or change of the moon in April, or at the first full or change in May, you have generally blowing weather from that quarter. If you find the winds stand good at south-west, shape your course to go through the 14° channel, which is between the Great Andaman and the Cocos Island, keeping as near the Andamans as possible. As soon as you are through, stand E. or EbS. if you can, and go within a league or two of the Island Narcondam, which is very high land, in latitude $13^{\circ} 19' N.$ and when you are 10 or 12 leagues to the eastward thereof, your passage is secure.

If you do not sail before the middle of May, the monsoon is then set in, and you may keep between the latitudes of $13^{\circ} 30' N.$ and $14^{\circ} N.$ but do not go to the northward of latitude $14^{\circ} N.$ and go through the said channel as above.

At this time of the year, if your glass be true, and the log is well kept, you will make the Andamans, when you have made about 10° easting. When you are through the channel, steer E. or EbS. and when the Island Narcondam bears south 2 or 3 leagues, you may steer ENE. NEbE. or NE. till you have $2^{\circ} 30'$ easting from the said island. In this run be sure to keep the log well; then steer north for Siriam Bay, and keep a good look-out to the eastward; for if you are 5 leagues to the eastward thereof in clear weather, you will certainly see the high land of Martaban; and if you do not see the said land, you may conclude you are not so far to the eastward of the bar.

Ships that come on the Pegu coast at this time of the year, ought to be well provided with good \rightarrow s and cables; for, should you be obliged to ride out a full or change of the moon; the latter end of May or beginning of June, you will certainly ride very hard, being shoal water and very strong tides, which run 5, 6, and 7 knots, and flow from 18 to 21 feet. If on the spring tides you chance to meet with dark dirty weather, ride it out in $8 \frac{1}{2}$ or 9 fathoms; and when you would deal with the coast, do not venture under 6 fathoms, till you see the land, and know whereabouts you are. If you meet with stiff soundings, mud or clay, in $6 \frac{1}{2}$ or $7 \frac{1}{2}$ or 8 fathoms, then you may be assured you are to the eastward of the bar, for to the westward is all soft ouze.

These stiff soundings are the best marks in blowing weather; but in fair weather, when you can set the tides, you may know thereby whether you are to the eastward or westward of the bar; for all along to the westward of the bar, the tides set to the north-eastward, or more easterly; whereas all along to the eastward of the bar they set NNE. and NbE. therefore, if you happen to fall into these latter tides way, you may depend upon it you are to the eastward of the bar; then come away to the westward with the ebb as soon as you can. In these tides way you meet with the aforesaid stiff soundings. Those who were exact in running the before-mentioned easting, fell in with the bar very well, not exceeding 4 or 5 miles on either side.

If you sail from Madras, in the Great Monsoon, that is, in the month of September, when you have made about $11^{\circ} \frac{1}{2}$ easting, in latitude $13^{\circ} 40' N.$ or thereabout,

thereabout, you will see the land of Andaman. Some have made 13° easting. this may be the fault either of the glass or log. After you are through the channel, follow the directions aforesaid, at least as near as you can; but if you should meet with calms, as most do who sail late, strive for \rightarrow ing ground; but take care you do not fall to the westward of Baragou Point.

After you have \rightarrow ing-ground, be sure to keep it (for if you lose it, you run a great risque of losing your passage) get into 7 or 8 fathoms, as opportunity presents; then sail along shore in $6\frac{1}{2}$ or 7 fathoms, keeping your lead going, at least twice a glass; and when you find your water deepen a fathom or thereabout, you are the length of Siriam Bar; there is the deepest water of any along the coast.

Keep a good look-out for the marks of the bar, which are 5 or 6 Palmira trees and aloes to the westward of the river's mouth; but there are several on the eastern shore: to the eastward of them the trees have smooth tops, and are like a wood. These are the best marks to know the river by.

Bring the Palmira trees on the west side of the river NW $\frac{1}{2}$ W. and stand in NNE. and north, for the bar; and as soon as you have the river's mouth open, stand in NNW. or more westerly, as judgment shall direct. After you are over the bar, the river is wide enough. The best time for going over is, at half or three quarters flood; for then the tide sets NNE. and north; but the first of the flood the tide makes the eastward very strong. If it be clear weather, you may see the high land of Martaban, when you are within Siriam or Pegu bar.

About the meridian of the bar, in 9, 10, or 11 fathoms, the water will be very white and thick, and the soundings soft and ouzy; but to the eastward of the bar the water is green, and the soundings blue mud, somewhat stiff.

Between the Fale River and Chinabuckear (or Chinabacore) are small soundings for the distance of 4 or 5 leagues, so that you will be obliged to steer more easterly; and as soon as you begin to deepen your water, you are then near Chinabuckear. If you fall in with the land to the westward of Siriam, be sure to mind your soundings: there is no mark on the land that will direct you, till you are off Chinabuckear; there is a great tree, or tuft of trees, a little to the westward of the river's mouth, which makes like an old chapel or barn, and is the best mark to know Chinabuckear by.

It is high water on Siriam Bar, full and change, at $\frac{1}{4}$ past 3 o'clock.

CCLVI. *The SITUATION of the OURAS.*

In the year 1728, the Compton, Captain Misener, bound for Coast and Bay, in latitude $0^{\circ} 55'S$. discovered 3 rocks, about the height of his main-top above water. He made thence casting to the Friar's Hood on Zeloan about 40° ; and supposed it to be the Ouras laid down in the charts to the northward of the line.

GENERAL

GENERAL AND PARTICULAR
D I R E C T I O N S
 F O R
SAILING to, in and from the EAST-INDIES.

CCLVII. DIRECTIONS *for SAILING from the LIZARD to the ISLAND MADEIRA, the CANARY ISLANDS, CAPE DE VERDE ISLANDS, and the EQUINOCTIAL LINE.*

HAVING passed the British Channel, and taken your departure from the Lizard; if possible, shape your course south-westwardly, so as to come into latitude 43° N. about 60 or 70 leagues westward of Cape Finisterre. The Lizard's latitude is $49^{\circ} 58'$ N. and longitude $5^{\circ} 20'$ W. from St. Paul's, London. The latitudes and longitudes of Cape Finisterre and other places, are shewn in the tables, or by the charts.

In the above latitude 43° N. you will be about longitude $14^{\circ} 10'$ W. from London, and a SbW $\frac{1}{2}$ W. course (the variation being allowed, and the true course found) will carry you between the islands Madeira and Porto Sancto, distance from that place off Cape Finisterre, about 210 leagues.

If you can continue nearly the same course (still every where allowing for the variation) you may pass by the Canary Islands; but if your course be more westwardly, these islands will be left to the eastward of you.

If these courses are steered with an open wind, the islands above-mentioned may be seen by those courses; but if the winds are contrary, by endeavouring, as much as possible, to come in sight of the Canary Islands, you will there find the NE. trade-wind begin to blow toward the SW. as hath been already largely explained in the former part of this Treatise.

At the time you get sight of the islands, it will be proper to refer to the views of them in the charts; because by these, and the ship's latitude, they may be known; also, the dangers near them.

If

If the winds will permit you to keep to the eastward, you may next see either the Cape de Verde Islands, or the Coast of Africa near Cape de Verde. Otherwise, by more westwardly courses, you may be to the westward of them. By endeavouring to see them, when you are no great distance from them, you may, if you can, shape your course SbE. till you come nearer the equinoctial line, where may be expected, at certain seasons of the year, variable winds.

It has been found by experience, that when ships cross the equinoctial, within certain limits of longitude, they come to the Cape of Good Hope in less time than when they cross the line either too far east or west of those limits. By crossing the line too much to the eastward, they are frequently driven toward the Coast of Guinea in Africa; and by crossing it too much to the westward, they are driven towards the Coast of Brazil, either of which may occasion them to prolong their voyage, if not lose their passage.

For the foregoing reasons, sometimes there are lines drawn on the charts of this part of the ocean, shewing the limits between which ships should pass the equinoctial, when bound to the Cape of Good Hope, or India.

In latitude 5° N. off the Coast of Africa, the tornadoes, or variable winds, may be expected. These are troublesome and very unhealthful, and should be avoided.

It is reckoned that about the longitude 15° W. of London is no improper place to cross the equinoctial for ships outward bound. Some have done it in longitude 12° W. of London. Some others more to the westward. The whole breadth of the limit in which it has been reckoned proper for ships outward bound to cross the equinoctial line, is from 12° W. to 26° W. longitude from London, the middle of which is 19° W. longitude. The ships that cross the line to the eastward of the limit, risque their being driven toward the Coast of Africa; and those that cross the line to the westward of the limit, risque their being driven toward the Coast of Brazil in South America.

If you cross the equinoctial line within the above limits, you have the less to fear of the ESE. current, setting toward the Coast of Africa, or of the NWbN. current setting toward the West India Islands. Some navigators have recommended it to cross the line near the meridian of the island St. Jago, one of the Cape de Verde Islands, which is in longitude $23^{\circ} 15'$ W. from London. The present variation at the equinoctial in this longitude is $7^{\circ} 37'$ W. In longitude 12° W. from London, at the line the variation is $12^{\circ} 15'$ W. and in longitude 26° W. the variation is $6^{\circ} 0'$ W. by which numbers the place of the ship near the line may be determined.

CCLVIII. DIRECTIONS for SAILING into PORTA PRAYA ROAD, in the Island
St. JAGO.

It has been customary for ships bound to India to put in St. Jago (one of the Cape de Verde islands) to get a supply of water and fresh provisions, of which there is a great plenty at that island. It is well worth their while to stop there, especially if they had a long passage from England; since this contributes greatly to the health of the ship's company the remainder of the passage to India.

Ships unfortunate enough to miss this island, when they fully intended to stop there for refreshments, have been forced to proceed to India without any; this has laid them under great difficulties, and proved very injurious to the health of their people.

The principal causes of ships missing the Island St. Jago are these: at the time of the year when they want to call there, the sun is near the zenith of the island, and therefore their observations are not very correct; at this time also the weather is generally so very hazy about these islands, that they cannot be seen far; therefore, their steering to make St. Jago is likewise wrong. The following method for making the Cape de Verde islands, when bound to St. Jago, seems preferable.

Being in the latitude of Sall, $16^{\circ} 50' N.$ with $11^{\circ} W.$ variation, you will be 12 or 14 leagues to the eastward thereof. Steer $WbN.$ This course, with allowance for variation and a southerly current (which you have always amongst and near these islands) will keep you in the parrallel nearly.

The Island Sall is an high bold island with a peak upon it, and may be seen a great way in clear weather; it lies so near the island Bonavista, that you cannot but make one or the other of them, (they bearing nearly N. and S. of each other) that is, you cannot pass between them without seeing both. When you get sight of them, keep to the eastward of Bonavista; and when to the southward of it, steer for the Island of May; which you will soon get sight of. You must also go to the southward of the island of May: and when you are near it, you may see the Island St. Jago, which is high land: steer for it, and keep along the SE. coast thereof until you come to an high steep point of land, a-breast of which you will have Porta Praya Road open all at once, and may see the governor's house, and the castle, it being white on the top of the hill, and the town near it.

You must haul close round the above mentioned point, and keep within a cable's length of the shore, until you come a-breast of the small island that lies on the west side of the road, or bay; then you may \rightarrow in $7\frac{1}{2}$ fathoms

R r

water

water, the east point of the bay bearing EbS. the west point SWbW. and the fort NW½W.

Being come to the equinoctial, you are to proceed in order to double the Cape of Good Hope, with as much expedition and safety as possible. It should be here noted, that from the month of November till March, near the Coast of Brazil, the winds blow often to the northward of the east; on which account it is thought best to keep your course as much to the SE. as possible, till you come into latitude from 20°S. to 35°S. or even 40°S. if contrary winds should not have permitted you to keep more to the eastward, till you can shape a south-easterly course, in order either to come to, or double the Cape of Good Hope.

In these parts of the southern ocean, it will be proper to keep a good look-out by night and day, there being supposed several small islands, rocks, and shoals, at different places in this ocean, whose latitudes as well as longitudes are not well known, although they have been seen by different voyagers.

The principal islands you may expect to meet with far off from the coast, in this southern ocean, are the Island St. Matthew, St. Helena, Ascension, Fernando Norono, Trinidad, and Tristan de Acuna; with several others of lesser note, whose latitudes and longitudes are shewn by the charts.

CCLIX. DIRECTIONS for SAILING round the CAPE of GOOD HOPE.

Being in the vast ocean between the Coast of Africa and Brazil, in the months of May, June, July, or August, which are the months wherein ships generally sail round the Cape of Good Hope for India, you will meet with fresh gales, and sometimes hard gales, from NW. to SW. with a great sea, and showers of sleet, hail, or rain, and the weather pretty cold; the more so as you approach the Cape. About 25° or 26° of longitude westward of the Cape of Good Hope, you will have 7° 20'W. variation, which you will increase gradually as you run to the eastward toward the Cape; and, as you come nearer the Cape, the variation increases faster, in proportion, than when you were at a greater distance from the Cape. A good parallel of latitude to run to the eastward in, is between 35° and 36° of south latitude.

The principal winds that blow at the Cape of Good Hope, are the SE. and NW. the other winds seldom lasting more than a few hours; the E. and NE. blowing the seldomest of any: the N. and NW. winds generally bring on foul weather and hurricanes.

In May, June, July, and August, the W. and SW. winds (which are frequently accompanied with fogs and cloudy weather) are soon over; whereas
the

the NW. winds sometimes blow violently for several days together in the above months, and sometimes in September, and by fits in other months: the sky is then constantly clouded, and they generally end in rain. The SE. winds blow at the Cape in most months of the year, but chiefly in October, November, December, January, February, March, and April: they are cold and dry, and the sky is generally very clear.

In March and April they have frequently very thick fogs at the Cape, and along the coast. As to the general temperature of the air, the Cape is by no means an hot country; though sometimes the heat is excessive, but of short duration: and it rarely freezes in winter, though the nights seem very cold. Thunder is seldom heard near the Cape.

The latitude of the Cape of Good Hope is $34^{\circ} 24' S.$ and longitude, by astronomical observations, $18^{\circ} 30' E.$ from London; variation observed ashore at the Cape, $19^{\circ} W.$ 1764, variation observed at sea off the Cape 3 or 4 leagues, $19^{\circ} 30' W.$ in 1764; and $20^{\circ} 30' W.$ in 1774.

It has been a general practice for ships, passing by the Cape of Good Hope to the eastward, to keep in the parallel of 36° , or $36^{\circ} 10' S.$ which is too high a latitude for a ship to keep in, to strike soundings on the Bank off Cape Lagullas; for $36^{\circ} 10'$ will but just run over the outer edge of the bank: so that if a ship should neglect to sound very often, she may run over the bank, without having soundings at all; for in that parallel of Latitude the bank is but narrow, it being not more than 25 or 30 leagues broad; and a ship may run that distance in one night's time, and so have no soundings at all. Some ships have been so circumstanced, and obliged to proceed on their voyage, without having an opportunity to correct their reckoning; which may have been attended with very dangerous consequences.

In steering to the eastward, in order to double the Cape, and to strike soundings on the bank off Cape Lagullas, keep between the parallels of latitude $35^{\circ} 45' S.$ and $36^{\circ} S.$ and do not go to the southward of latitude $36^{\circ} S.$

As you run to the eastward you will find the variation increase very fast. Make the variation and latitude your sure guide. Your reckoning will always be a-head of the ship in sailing round the Cape, occasioned by a strong westerly current, which takes its beginning at the south end of Madagascar, and runs to the westward all along the Coast of Africa to the Cape of Good Hope; there it runs stronger than any where else.

This strong westerly current setting against the violent W. and NW. winds, makes monstrous high seas off the Cape: so strong is this westerly current,

that it has frequently set ships, returning from India, round the Cape to the westward when they have least expected it; even when they have been lying-to, under a reefed main-sail, or a balanced mizen.

The ingenious navigator should take the latitude and variation for his principal guide; these, if carefully observed, will not deceive him.

Being to the westward of the Cape of Good Hope, and steering to the eastward, between latitude $35^{\circ} 45' S$ and $36^{\circ} S$, if you have increased the variation to $20^{\circ} W$. you must then keep a good look-out, as you are then not far from the Cape. When you have increased the variation to $20^{\circ} 30' W$. (supposing the observation good and exact) you are then a-breast of it; that is, the Cape bears from NbE. to NbW. (or thereabout) of you; and the distance will be your difference of latitude from it.

You must continue to steer to the eastward, between the fore-said parallel of latitude, and you may soon expect to get soundings; so that in latitude $35^{\circ} 45' S$. you have soundings much sooner than in latitude $36^{\circ} S$. for the bank rounds off with a slope to the eastward.

When you have increased the variation to $21^{\circ} W$. $21^{\circ} 10' W$. or $21^{\circ} 12' W$. in latitude $35^{\circ} 45' S$. $35^{\circ} 52' S$. or $36^{\circ} S$. you will be sure to have soundings at 70, 75, or 80 fathoms water, fine grey sand. Cape Lagullas will then bear off you, from NbW. to NbE. or nearly N. and the difference of latitude will be your distance from the said Cape, which will be about 17, 19, or 22 leagues.

Cape Lagullas's latitude is $34^{\circ} 54' S$. and longitude $20^{\circ} 15' E$. from London; the variation, 1764, by several observations off this Cape, was $20^{\circ} 2' W$. $20^{\circ} 12' W$. The variation, 1774, was $21^{\circ} 12' W$.

You have soundings all the way between Cape Lagullas and the Cape of Good Hope, from 50 to 60, 70, and in some places 80 fathoms; sand and ouzy ground, from 5 to 10 leagues off shore.

Off the pitch of the Cape of Good Hope SWbS. distance 3 or 4 miles, there is a ledge of rocks even with the water's edge, on which the sea breaks very high. Passing about 3 or 4 miles without them in, from 30 to 33 fathoms, are coral rocks. When in 33 fathoms, Cape Falso bore E½N. and the easternmost part of the Cape of Good Hope NbE. distance 3 leagues, and from the breakers 3 miles; from thence, standing to the westward, soon deepened the water to 40 and 46 fathoms, corally bottom; and soon after lost soundings. You have no soundings after you are past these rocks, till you come within 2 miles of Freeman's Point.

The

The Cape of Good Hope makes the west point of False Bay; it has rocks under water near its western, southern, and eastern coasts, which makes it hazardous for ships that come too near it without proper draughts, shewing the places of these dangers.

In 1751, 1752, and 1753, the Abbé de la Caille determined its latitude and longitude by observations; and drew a small map of the Cape and the adjacent places.

He found that the principal winds at the Cape are the SE. and the NW. the rest seldom lasting more than a few hours; the E. and NE. blowing the seldomest of any. The N. and NNW. winds generally bring on foul weather and hurricanes in April, May, June, July, and August; the W. to the SWbS. are frequently accompanied with fogs and clouds, which are soon over: sometimes violent NW. winds blow for several days together in May, June, July, August, and September, and by fits in the other months; the sky is then constantly clouded, and they generally end in rain: the SE. winds blow at the Cape in most months of the year, but chiefly in October, November, December, January, February, March, and April; they are cold and dry, and the sky very clear, unless after a rainy season. As to the general temperature of the air on land near the Cape, it is by no means an hot country: though sometimes the heats are excessive, they are but of short duration.

In February, 1752, Reaumur's thermometer was up at 36; this was thought very extraordinary; at midnight it was sunk to 15: an epidemic disorder immediately followed, which carried off numbers. It rarely freezes in winter, though the nights seem very cold. He never knew his thermometer sink so low as 4; below freezing.

The mountains of Drakersteen, the height of one of which measured 1071 toises, appear white at the top for some weeks, as if covered with snow; but it is no other than hail. Thunder is seldom heard near the Cape; but it lightens frequently. The barometer varies from 27 inches 10 $\frac{1}{2}$ lines to near 28 inches 8 lines, and this chiefly in winter. The variation of the magnetic needle was 19 W. from the north. The new moon makes high water at the Cape at $\frac{1}{4}$ an hour past 2 P. M. and the tide seldom rises more than 3 feet, except after an hurricane, or some extraordinary cause.

This is a most excellent place for all kinds of refreshments; and being a most wholesome climate, the sick seamen recover here speedily, especially from the scurvy.

Wood

Wood is a very scarce article, and consequently dear; but here is plenty of good water. In Table Bay the watering-place is at the wooden pier opposite the fort, and within musket-shot thereof; the water is brought down to the pier-head in pipes, to which you fix an hose, and fill your casks in the boat; so that great dispatch may be made in watering here.

CCLX. DIRECTIONS for going into TABLE BAY, at the CAPE of GOOD HOPE.

Being off the Cape of Good Hope, and past the above-mentioned rocks, or breakers, you may sail close along shore, and no danger till off Freeman's Point, which is to the northward of Chapman's Bay, where there are some rocks, which lie a small distance from the shore. You may go within $1\frac{1}{2}$ mile of Freeman's Point, and have soundings in 52 or 53 fathoms, sandy bottom; then steer for Green Point, keeping $1\frac{1}{2}$ mile, or thereabout, off shore; you will have from 50 to 48, 46, 40, 36, and 34 fathoms, fine sand and broken shells. The coast forms a bay between Freeman's Point and the Sugar-Loaf Hill, which is called Freeman's Bay.

Before you come to Green Point you will see Penguin Island, which is a low flat island, with a look-out house on the middle of it: there they hoist a flag when ships are in sight. If you are pretty well in the Freeman's Bay, you will see Penguin Island, bearing NNE $\frac{1}{2}$ E. or NEbN. From the foot of the Sugar-Loaf Hill to Green Point, which is a low green point, you will see several rocks above water, lying some distance from the shore; there is no danger but what you see.

As you run in, give these rocks a reasonable birth, and you will shoalen your water gradually from 34 to 30, 26, 20, 16, and 12 fathoms, rocky ground; so that there is no ϕ -age hereabout. You may borrow upon Green Point, to 10, 9, or 8 fathoms, and no danger; so steer up the bay, and you will have 8, 7, or 6 fathoms, regular soundings; but rocky ground till you get about a mile to the eastward of Green Point; then the bottom is sandy, and fit for ϕ -age.

You may ϕ in Table Bay, opposite the town, in 7, 6, or 5 fathoms; but it is not very holding ground. A good and convenient birth (and indeed it is allowed to be the best birth in the bay) is the house on Penguin Island, bearing N $\frac{1}{2}$ W. Green Point NW $\frac{1}{2}$ N. the flag-staff on the Lion's Rump W $\frac{1}{2}$ S. Charles's Mount S $\frac{1}{2}$ W. in 5 fathoms, distance from the town 1 mile, and from the nearest shore $\frac{1}{2}$ a mile. About $1\frac{1}{2}$ or 2 cables length further to the eastward, is
another

another good birth; there you have 6 fathoms. All over the west side the bay is clear ground, but the NE. part of the bay is all foul.

All the land about the Cape of Good Hope is very high; but the Table Land is most remarkable, it being an excessive high mountain, quite level on the top, and breaks off perpendicularly at both ends, till it joins the other high lands near it. The east part of the Table Land joins to a high peaked mountain, called Charles's Mount; and the west part joins to the Sugar-Loaf Hill, a very high and remarkable peaked mountain, much resembling the top of a sugar loaf: on the top of this hill the Dutch have a look-out house, where they hoist a flag when any ships are in sight. To the north-westward of the Sugar Loaf, and joining thereunto, though at a pretty good distance, is another mountain, but much inferior to the Sugar-Loaf Hill in height, called the Lion's Rump: there they also keep a look-out, and hoist a flag.

These lands make this place very remarkable, particularly the Table Land, which is much higher than any land near it, and may be seen a great way at sea in clear weather. The latitude of the Table Land is $34^{\circ} 4'S$. and the same longitude as the Cape of Good Hope; they are nearly north and south of each other. The Cape town is situated at the foot of the Table Land, in a fine pleasant valley near the sea.

It frequently happens, that when ships get a-breast Green Point, and come to open Table Bay, they meet with strong fiery breezes from SE. or ESE. blowing right out of the bay so hard that a ship cannot turn to windward. When that is the case, it is usual for ships to bear away for Penguin Island, taking care to keep well to the southward and eastward of it, and not go within $1\frac{1}{2}$ or 2 miles of the S. or SW. parts thereof; for at that distance there lies a ledge of rocks under water, on which the sea breaks very high in bad weather; but they do not shew themselves in fine weather, therefore they are then the most dangerous.

You may \rightarrow on the east side of Penguin Isle, in 12 or 14 fathoms, 1 or $1\frac{1}{2}$ mile off it, or within $\frac{1}{4}$ of a mile of it, in 10 or 11 fathoms: there you are a good deal sheltered from the SW. sea by the ledge of rocks above-mentioned, and have clear \rightarrow ing; but all the N. and NE. parts of this bay are foul ground.

Ships lie at Penguin Isle till the wind comes to SW. or W. which it generally does in the morning, during the fair-weather season; then they weigh, and run into Table Bay, and \rightarrow in a proper birth.

In

In their summer time, or fair-weather season, at the Cape, which is from October to April, you generally have, in the mornings, regular sea-breezes from SW. and W. which continue till noon, or sometimes longer; and then the wind comes off the land at SE. or ESE. and mostly blows fresh the remaining part of the day, and all night till morning; then the sea breezes comes off again.

In the months of May, June, July, and August, the W. and SW. winds blow strong, and are frequently accompanied with fogs and cloudy weather, but are soon over. Sometimes violent NW. winds blow for several days together, and by fits in the other months; the sky is then constantly clouded, and they generally end in rain. These winds extend to the 27th degree of south latitude, and from 100 leagues to the westward to 200 leagues east of the Cape.

The principal winds at the Cape are the SE. and NW. the others seldom lasting longer than a few hours; the E. and NE. winds blow the seldomest of any: the N. and NW. winds generally blow in hurricanes, and bring on foul weather; the SE. winds blow in most months of the year, more or less, but chiefly in the summer season; then they frequently blow strong for several days together: these are the most prevailing winds for 200 leagues to the eastward of the Cape at this season.

Whenever you see the Table land begins to be clouded, it betokens a strong E. or ESE. wind, which, soon after is clouded over, comes on, and blows excessive hard, sometimes 2 or 3 days together; whereby ships frequently part their cables, or bring both \rightarrow s a-head: therefore it is usual, as soon as ships are moored in this bay, to strike their yards and top-masts, and make all as snug as possible.

It is reckoned extremely dangerous for ships to lie in Table Bay after the 10th or 15th of May. The Dutch never suffer their ships to lie after that time, on account of the approaching season, when the NW. winds are daily expected to set in, which blow so violently that no ship can possibly ride it out. Many ships and lives have been lost in the attempt, or when they have been surprised here unexpectedly with those winds.

As it is customary for ships to sail from Table Bay with the wind southerly, they generally go out between Penguin Island and the Continent; thereby they carry a true and steady wind with them all the way they go; whereas, if they sail out between Penguin and Green Point, they run out of the wind, and may lie becalmed several hours under the high land.

A ship

A ship that is about doubling the Cape of Good Hope for Europe in the months of May, June, July, or August, when the winds blow very strong from the westward, will always find a current in their favour, setting round the Cape, against those storms, even though they were lying-to. Such a ship, having had soundings, &c. off Cape Lagullas, will soon after, as she goes to the westward, lose soundings; which is a convincing proof that she is to the westward of Cape Lagullas. As the weather at this season is generally thick and cloudy, so that you cannot see the land far (and as it would be imprudent to attempt it, after losing soundings to the westward of Cape Lagullas, since you cannot be very exact in your reckoning, on account of the strong current) that you may know when you may steer to the north-westward with safety, your best and surest guide is the variation. Being near the latitude of the Cape of Good Hope, and finding the variation any thing under 20° W. you may be assured you are far enough to the westward of the Cape of Good Hope, and may steer to the north-westward for St. Helena.

CCLXI. DIRECTIONS *for SAILING into* SIMON'S BAY, *on the* WESTERN COAST *of* FALSE BAY.

Simon's Bay is a safe and good road at all times of the year, but more especially from the beginning of May to the beginning of October, when ships cannot lie in Table Bay; and where all kinds of refreshments may be had the same as at the Cape Town.

Hottentots Point, or Cape Falso, is the outermost point on the east side of False Bay; it lies about 6 leagues due east from the Cape of Good Hope, and may be seen 8 or 9 leagues in clear weather: between them is the entrance into False Bay. In the opening of False Bay you have 54 and 56 fathoms, muddy ground; Hottentot Point bearing ENE. and the easternmost part of the Cape of Good Hope NW $\frac{1}{2}$ W. distance 3 or 4 leagues, in latitude $34^{\circ} 25'$ S. and variation $19^{\circ} 30'$ W. 1760, or 21° W. 1776.

Entering into False Bay, it will be best to steer about midway between the Cape of Good Hope and Cape Falso; and when within the said capes, edge over for the western shore until within a league of it; in which track you will have soundings from 40 to 39 fathoms, sandy ground. In case of its falling calm, or that you have not day-light enough to get into Simon's Bay, you may \rightarrow in from 36 to 20 fathoms, clear sandy ground. As you sail up False Bay, you will see, on the NW. side, some remarkable white sand-hills appearing

S §

like

like snow: keep sailing about a league off shore until these hills are fairly open; and then steer for them NWbN. by compass, until Noah's Ark and Roman's Rocks appear. If the wind should be out of the Bay, you may turn it in, standing within a mile and a half of each shore, without danger. If you have a S. or a SE. wind, it will be best to steer in for Simon's Bay between Noah's Ark and Roman's Rocks; for when near in, the winds are apt to draw off from the high land to the westward; but you may go in on either side of Roman's Rocks, and \rightarrow in Simon's Bay, about half a mile off shore; Noah's Ark bearing about SEbE. and Roman's Rocks E $\frac{1}{2}$ S. in 8 or 9 fathoms, sandy ground; and though sand, it holds surprisingly.

In Simon's Bay 13 or 14 sail of ships may lie moored in safety. Ships moor here a cable each way, the best bower to the NW. and small bower to the SE. as the NW. winds generally prevail in the winter-time, and come off the hills in excessive strong gusts, with rain and hail. The new moon makes high water here at half past 3 P. M. The tides seldom rise more than 3 feet, except after a storm, or some extraordinary cause.

There is no tide nor current to be perceived all over False Bay; the soundings also are regular, with a clear sandy bottom. Ships must come no nearer the S. and SE. parts of Seal Island than 22 fathoms, for there are sunken rocks which extend near a mile off.

Simon's Bay is much more commodious for ships at any time of the year than Table Bay. The fresh water here is excessive good, and all kinds of provisions and refreshments are to be had here the same as at the Cape Town, and at the same prices. From Simon's Bay to the Cape Town is about 17 or 18 miles: the road goes along the side of the hills until you come to the Cavalry House; from whence it is flat, clear, and tolerably good.

For further remarks and directions see Mr. Nicholson's draught of False Bay and Simon's Bay, wherein are the views of the land, &c.

Ships going into False Bay should take great care to keep at least 4 or 5 miles off the coast of the Cape of Good Hope; because a little within this distance the Colnbrook East Indiaman lately struck on a sunken rock, and was lost; besides which here are several other sunken rocks in this bay, and near its coast.

CCLXII. DIRECTIONS *concerning the CAPE of GOOD HOPE, and the SOUTHERN-
MOST PART of AFRICA.*

The Cape of Good Hope is the westernmost Cape on the southernmost Coast of Africa, and hath three bays belonging or adjoining to it, namely, Table Bay, on the north; Hout Bay, on the west; and False Bay, on the south; the principal of which is Table Bay; Hout Bay being small and inconvenient for ships, and False Bay being dangerous of access, at small distances from the shore, on account of sunken rocks, whereby several ships have been lost.

To the ESE. from the Cape of Good Hope (variation of the compass being allowed for) distance 90 miles or 30 leagues, is Cape Lagullas, (as it is commonly called) which is the southernmost Cape of Africa, in latitude 35° S.

The breadth of this southernmost promontory of Africa, between the parallels of 34° and 35° south latitude, is near 400 miles, or 133 leagues; and the soundings southward extend about 90 miles, or 30 leagues.

Between the extent of 400 miles before-mentioned, along the south Coast of Africa, there are several bays, some of which are larger than others, but all of them little frequented by ships. The first of these is St. Sebastian's Bay, on the west side of which is Cape Infant. - The second is St. Blaize's Bay, whose soundings are pretty well known. The third, St. Catharine's Bay, on the west side of which is Cape Talhado. The third, Formosa, or Mossel Bay, on the west side of which is Cape del Gada. The fourth, is De la Goa Bay, having on its west side Cape Arcifes, or Cape Recifs.

These bays all of them are open toward the ocean is a south-eastwardly direction; and have their respective distances from each other, as described in their respective draughts.

CCLXIII. DIRECTIONS *for SAILING from off the CAPE of GOOD HOPE, toward
the INNER PASSAGE for INDIA.*

Cape Lagullas bears from Cape Good Hope E. 19° S. or EbS $\frac{1}{2}$ S. distance 30 leagues; you have soundings all the way between them, in shore, at 40, 50, and 60 fathoms, sand and ouzy ground, sometimes muddy sand. In the above depths you will be from 5 to 10 leagues off shore.

The land between these Capes is very high, but Cape Lagullas is not high. A description of the land about this Cape, and the coast to the eastward of it, is given in returning from India.

Suppose you had soundings off Cape Lagullas, in the latitude, variation, and depth of water above-mentioned: suppose the latitude $35^{\circ} 52'$, variation $21^{\circ} 12' W.$ the depth of water 75 fathoms, fine grey sand, and Cape Lagullas to bear N. of you, distance 19 leagues; all these things we are sure of, and they will answer the same end as if you had seen the land. Were you to see the land (as the weather is generally cloudy and foggy) you could not judge how far you were got to the eastward, except you saw some very remarkable part of the land that you knew: and it would require your being well acquainted with it, to know it well. So that the soundings answer all the ends of seeing the land; and by the soundings you may correct your reckonings, and take a fresh departure.

Cape Lagullas is supposed to bear north of you, distance 19 leagues. You may now steer to the eastward, in the parallel of latitude $36^{\circ} S.$ In this latitude, and 14 or 15 leagues to the eastward of where you first had soundings, you will have 90 fathoms water, brown muddy sand, variation $21^{\circ} 39' W.$ Hereabout the variation increases very fast. Fifteen or 20 leagues to the eastward of this, you will have no soundings in latitude $36^{\circ} S.$

The ships that are bound to China, when they have had soundings off Cape Lagullas, take their departure, and steer for the Islands St. Paul and Amsterdam, and then to the Straits of Sunda. The method of making that passage, is farther on. But first for the Inner Passage.

CCLXIV. DIRECTIONS for proceeding toward the INNER PASSAGE, or between MADAGASCAR and AFRICA.

The ships that are bound through the Inner Passage, that is, between Madagascar and the Continent, which is much the nearest way to India, observe the following directions for making that passage.

When you have had soundings off Cape Lagullas, as before-mentioned, you steer to the eastward in the parallel of latitude $36^{\circ} S.$ or thereabout, till you have made longitude $12^{\circ} E.$ from Cape Lagullas, or rather till you have increased the variation to $26^{\circ} W.$ You may then make some northing, but with caution. Hereabout the strong westerly and NW. winds, that you had off the Cape, and have continued with you thus far, begin to moderate, and become variable, and are frequently S. and SW. and sometimes SE.

Before you go to the northward of $35^{\circ} S.$ you should make $15^{\circ} E.$ longitude from Cape Lagullas, or have $26^{\circ} 50'$, or $26^{\circ} 55' W.$ variation; and let the variation be your guide.

Consider

Consider the shocking account of the loss of the Doddington Indiaman. The day at noon, before she was lost, she was in latitude, by observation, 35° S. and had made longitude from Cape Lagullas, $12^{\circ} 50'$ E. They had the winds from SSW. to SSE. strong gales, with a large sea; and altered their course at noon, from E. to ENE. and run about 70 miles on that course, till about a quarter before one A.M. when she struck, and went all to-pieces in less than 20 minutes.

The Doddington's latitude, by account, when she struck, was $34^{\circ} 6'$ S. longitude, made from Cape Lagullas, $13^{\circ} 45'$ E. by carefully working their supposed run to the time she was lost: what variation they had is not known; it would be of use, it not having been taken on that coast.

This shocking circumstance of the loss of the Doddington, and such a number of lives, will make the skilful navigator shudder, and make him rack his invention to point out the cause of such misfortunes, and contrive how to avoid the like accidents happening for the future, by finding proper methods effectually to prevent them.

The first cause of the loss of the Doddington seems to have been, that their reckoning must have been very much a-head of the ship, occasioned by the current, which runs strong to the westward, all along this part of the Coast of Africa to the Cape of Good Hope.

The second cause; that the land is erroneously laid down in our draughts, charts, and books; the land lying much more to the southward than it is laid down. The charts make it trench away to the northward too quick: this is a very great error; it deceives and misleads the navigator, making him haul to the northward too soon, running him into danger; whereas he should keep more to the eastward to avoid it.

The third cause is, that the Doddington made her course too much northerly. She steered ENE. and must at least have had 25° W. variation, which is $2\frac{1}{2}$ points, with a great sea from the southward: so that she could not make her true course better than NE $\frac{1}{2}$ N. which was too northerly a course, had she been 2° of longitude to the eastward of where she was by her reckoning.

The Doddington's reckoning seems to be very erroneous; for they had made longitude to where the ship was lost $13^{\circ} 45'$ E. from Cape Lagullas; and where the ship was lost is not more than 8° to the eastward of the said Cape. By the latest observations it was but 7° E. of Cape Lagullas

The

The variation hereabout, as well as several other parts, may be looked upon as a principal and sure guide in navigation. This unfortunate ship should be a caution for all navigators to be very cautious not to haul to the northward too soon; for the currents are very deceiving.

It appears, by the account of the people that were saved out of the *Doddington*, that she was not the only ship that had been cast away on that island; for they saw the remains of the wreck of several other ships, that had been lost there; no doubt, by the same cause that she was lost.

By several journals of experienced navigators, on the navigation between Cape Lagullas and Madagascar, it appears that ships in general make 24° of longitude from Cape Lagullas to St. Augustine's Bay, on the Island Madagascar, or the land in latitude 24° S. which is the place ships should fall in with. As there are 24° of longitude between Cape Lagullas and Madagascar, why should ships haul to the northward when they have not made more than half that longitude, and run the risque of falling in with the coast unexpectedly? This coast is frequently a lee shore, by the winds blowing more southerly, or from SE. to SW. with strong gales, a great sea, and often hazy weather; all disagreeable circumstances to be upon a low shore with. It may be avoided by the following method.

When a ship, in latitude 35° S. has made 15° E. longitude, and has increased her variation to 27° , she may haul to the northward with safety, and make her course ENE. then NE. and by degrees more northerly: thereby you will continue the variation from 27° to $26^{\circ} 50'$ W. till you get into latitude 31° S. and make from Cape Lagullas about 18° E. longitude. From hence the variation will decrease faster as you run more to the northward. In latitude $25^{\circ} 19'$ S. and longitude, made from Cape Lagullas, $20^{\circ} 4'$ E. you will have variation $25^{\circ} 10'$ and $25^{\circ} 4'$ W. In latitude $24^{\circ} 3'$ S. and longitude, made from Cape Lagullas, $23^{\circ} 20'$ E. you will have variation $23^{\circ} 45'$ W. This is not far from the land of Madagascar. Here a ship should keep to the southward of latitude $22^{\circ} 30'$ S. in order to shun the dangerous shoals of the Bassas de India.

CCLXV. DIRECTIONS for avoiding the BASSAS DE INDIA.

The Bassas de India is a most dangerous shoal; in length 5 or 6 miles, and very near as broad: it is even with the surface of the water, consisting of some dry spots of sand and rocks, there being nothing higher upon it than a high catamaran under sail: several parts of this shoal have the resemblance of

an Indian catamaran under sail; there are breakers every where about them; and they cannot be seen from a ship's deck above 5 or 6 miles, or from the mast-head above 9 or 10 miles. There are no soundings within 3 miles of them.

This shoal was seen by his Majesty's ship *Norfolk*, in January, 1764, in returning from India. She first made Cape St. Sebastian on the Continent, in latitude $22^{\circ} 41'S$ and longitude from London (by computation) $36^{\circ} 32'E$.

Cape St. Sebastian is tolerable high land; about as high as the land of the Start Point in England, and projects but a little way out into the sea. When you are off this Cape, it appears higher land than any other in sight, either to the northward or southward of it, and has no soundings within 3 miles of it. The coast all hereabout is tolerable high land, with a steep white sandy beach, which, at a distance, appears like chalk cliffs.

The *Norfolk* had the winds southerly, and took her departure from Cape St. Sebastian; when steering to the eastward, the third day at noon had a very good observation, and at 3 P. M. made the Bassas de India, in the NE. of them, which obliged them to tack: they were within 3 miles of them, and had no soundings. They make this shoal to lie in latitude $21^{\circ} 45'S$. and longitude eastward of Cape St. Sebastian, $4^{\circ} 20'E$. They then stood to the westward, and made Cape Corientes; and $5^{\circ} 10'W$. longitude from the Bassas de India to the said Cape St. Sebastian. Cape Corientes is also tolerable high land, and has much the same appearance as the land about Cape St. Sebastian. Cape Corientes lies in latitude $23^{\circ} 42'S$. and longitude, by computation, $36^{\circ} 40'E$. from London. This Cape, and the land about it, may be seen, in clear weather, 9, 10, or 11 leagues, and appears to be as bold a shore as that about Cape St. Sebastian.

Hence the longitudes of the places from London, will be thus:

St. Sebastian on the Coast of Africa, longitude from London $36^{\circ} 32'E$.

Longitude made by from C. St. Sebastian to the Bassas de India $4^{\circ} 20'E$.

Longitude of the Bassas de India, inferred from C. St. Sebastian $40^{\circ} 52'E$.

Longitude of Sandy Island, (off St. Augustine's Bay) $44^{\circ} 15'E$.

Longitude of Basses de India, as inferred from Sandy Island, $40^{\circ} 52'E$.

The Bassas de India, west longitude of Sandy Island, $3^{\circ} 23'W$.

It is surprising how ships can blunder through between Madagascar and the Continent, without endeavouring to make the land, when there are so many shoals and dangers lying in their way, and when there is the greatest probability

bility of their reckoning being incorrect. In going through this passage they unexpectedly fall in with this or the other shoal, and narrowly escape being lost, when they might with ease and safety make the Continent, either about Cape Corientes, or Cape St. Sebastian, and from thence take a fresh departure. If they were not inclined to make Madagascar about St Augustine's Bay (which sometimes perhaps they may be forbid to do) they might then either make the Continent as above mentioned, or the south part of Madagascar, about St. John's, in latitude $25^{\circ} 30'S.$ or thereabout, and take a fresh departure. If forbid to stop at St. Augustine's Bay, it is adviseable to make the land of Madagascar in latitude $24^{\circ} 10'S.$ or $24^{\circ}S.$ it being a pretty clear part of the coast, and not far from St. Augustine's Bay. Or a ship may steer for Madagascar in latitude $17^{\circ} 40'S.$ until she gets soundings upon the Precellas bank from 30 to 15 fathoms. On this bank the soundings are very irregular; but keep in 20 fathoms, it is a good depth till you lose soundings; then steering NEbN. will carry you in sight of Joanna. The land in latitude $24^{\circ}S.$ is low near the sea, but rises gradually in land to a tolerable height, and may be seen from a ship's mast-head 9 or 10 leagues, and from the deck 6 leagues.

CCLXVI. DIRECTIONS for making the LAND of MADAGASCAR and ST. AUGUSTINE'S BAY.

Mr. Nichelson made the land of Madagascar in latitude $24^{\circ}S.$ and longitude, made from Cape Lagullas, $23^{\circ} 55'E.$ variation $22^{\circ} 21'W.$ There were 8 sail in company, who all made the variation $22^{\circ}W.$ sounded, and had 50 fathoms water, coarse yellow sand; 3 leagues off shore. The longitude of the land, in latitude $24^{\circ}S.$ by computation, was $44^{\circ} 20'E.$ from London.

The coast from latitude $24^{\circ}S.$ to St. Augustine's Bay, lies north and south by compass, without reckoning the variation, distance 6 or 7 leagues. There is a reef lying along parallel to the shore, N. and S. distance from the shore 2 or 3 miles, which the sea breaks upon in most places; but it is very smooth within it. Between latitude $24^{\circ}S.$ and St. Augustine's Bay, the variation was $23^{\circ}W.$ 1760.

Before you come as far to the northward as St. Augustine's Bay, or Sandy Island, you will see the high land about St. Augustine's Bay, which is pretty high land near the sea, but much higher at some distance in land: there is one hill on the north side of the Bay, which much resembles the roof of Westminster-Hall; therefore navigators call it Westminster-Hall. This hill lies a long way in the country, and bears from you, when at \rightarrow in the Bay NE $\frac{1}{2}$ N.

As

As you sail to the northward, you will raise a small low island, with some low trees and shrubs on it, and a very white sandy beach; this is called Sandy Island. There is a ledge of rocks NW. from this island a large half-mile, with foul ground and breakers all round it, some distance from it.

This island lies near the south side of St. Augustine's Bay, at the westernmost part thereof, and is in latitude, by observation, $23^{\circ} 42' S.$ and longitude by computation, $44^{\circ} 15' E.$ from London; variation $23^{\circ} 57' W.$ 1760. You have very deep water all about this part of the coast. Sandy Island EbN; N, distance 5 or 6 miles; 160 fathoms, rocky ground.

In sailing in for St. Augustine's Bay you must go to the northward of Sandy Island, and borrow upon it, to avoid the shoals on the north side of the Bay, there being rocks under water, on which the sea breaks in stormy weather, bearing from the Tent Rock NWbN.

You will have no soundings till Sandy Island bears SbE. or S. of you. You may borrow upon the island to 12 or 13 fathoms water; and passing it in that depth, you will continue soundings for about a mile, from 12 to 15 and 16 fathoms; then no soundings.

After this you must not expect to get soundings with your hand-line, till you come on the bank of the Tent Rock; at least it is not adviseable for a ship to go into so little water, as to get ground with the hand-line; for in 12 and 14 fathoms water, you will not be more in some places than 3 or 4 ship's lengths from a reef that lies parallel to the southern shore, and about half a mile from it.

CCLXVII. DIRECTIONS for SAILING into ST. AUGUSTINE'S BAY.

Having passed Sandy Island in 12 or 13 fathoms water, and steering to the eastward for St. Augustine's Bay, you will see high land close to the sea, on the south side of the bay; also high land some distance in the country; and the mouth or entrance of the river will be open to you: this serves as a leading mark up to the bay, and carries you clear of the reef, and of all danger.

The north point of the river is a steep bluff point; the south point of the river is also a steep point, with a low woody point running out to the northward from the steep point thereof: these points are good leading marks. Keep the high bluff point, on the north side of the river, a sail's breadth open, with the low woody point on the south side of the river; when the bluff point, on the north side of the river, will bear E½S.

As you run to the eastward, after you lose soundings from Sandy Island, you will have no soundings till you come off the first low sandy point on the southern shore. Off this point is a shoal running out a small distance, on which the sea breaks: there are 9 and 10 fathoms close to the breakers, and 14 or 15 fathoms, two cables length without them. It deepens gradually from 14 to 28 fathoms $\frac{1}{2}$ of a mile to the northward of this point; then no soundings. The leading mark must be kept a large sail's breadth open in passing these breakers, which you should pass in 14 or 15 fathoms.

As the wind generally blows off the southern shore, the leading mark will carry you up along the back of the reef. From this point to the Tent Rock there is a reef that lies parallel to the shore, and a large half-mile distance from it, which dries at low water, but is intirely covered at half-tide; and there are two rocks almost at the east part of this reef, which are always seen, unless at high water on spring-tides. At $\frac{1}{2}$ flood, or $\frac{1}{2}$ ebb, they appear like two small boats or canoes. About half way between these rocks, and the low sandy point, where the breakers are, there is a swatch in the reef, having 16 or 17 fathoms close thereto, which may be apt to mislead people that are not acquainted with it, and go by their soundings.

At high water time, when this reef is covered, and a ship coming in, not acquainted with the place, having no soundings with the hand-lead, hauls in toward the shore, in order to get soundings, she may thereby run bump upon the reef, before they have any soundings with the hand-line. Those who thought themselves well acquainted with this place, have committed this error: lucky for them, it was flowing water; by this they got off, though with the loss of their fore foot and part of their keel; and narrowly escaped being lost.

Observe the leading marks; keep them a sail's breadth open, and you will pass this swatch in 21 fathoms water; two cable's length further out, you will have 34 fathoms, and then no soundings.

Between the swatch of the reef, and the two rocks that appear at $\frac{1}{2}$ tide, you will have no soundings at 70 fathoms, with the leading marks a sail's breadth open: for here the reef is steep to.

Steering on to the eastward with the leading marks above mentioned, you will have soundings 29 and 30 fathoms; then you come a-breast off the two rocks, that appear at $\frac{1}{2}$ tide. There are 12 fathoms within three ships length of these rocks, and 20 fathoms a small cable's length without them; 30 fathoms N.E. from them, and three cables length without them, the leading
mark

mark as before mentioned; a little without that, 32 fathoms, and then no soundings.

Steer to the eastward with the points of the river a sail's breadth open, (the north point of the river will then bear E $\frac{1}{2}$ S.) till you bring Westminster-Hall with a low sandy point on the north side of the bay; then it will bear NE $\frac{1}{2}$ N. Then begin the regular soundings on the bank, and you will be past, or a little to the eastward of the two rocks that show at $\frac{1}{2}$ tide; and they will then bear SW. of you, and you will have 26 fathoms water; and now you may bring the points of the river in one, or shut them in with each other, without danger. You shoalen the water gradually from 26, 21, 18, 15, 12, 11, 10 to 9 fathoms. There is good \rightarrow ing in from 8 to 12 fathoms, the Tent Rock bearing from S $\frac{1}{2}$ E. to S $\frac{1}{2}$ W.

There are other marks for \rightarrow ing, viz. observe the low woody point on the south side the river. Some distance from this point the land rises up to a steep bluff, something like the bluff point on the north side of the river, but much higher: bring these two bluff points in one, or touching, or a little shut in; and the Tent Rock from S $\frac{1}{2}$ E. to S $\frac{1}{2}$ W. is the best \rightarrow ing. With these bearings you will have from 10 to 12 fathoms water, clear and good holding ground; and Westminster Hall will bear about NE $\frac{1}{2}$ N. or you may go nearer the Tent Rock, in 8 or 9 fathoms water, and have a very good birth, with good holding ground, clay and mud.

Here you should moor east and west, that you may ride between the tow, and with an open haufe, when the wind comes to the northward, and blows hard; which it sometimes does; should you moor north and south, in some places, your outer \rightarrow would lie in very deep water.

The broadest part of this bank is with the Tent Rock bearing S $\frac{1}{2}$ E. You will have soundings $\frac{1}{2}$ of the bay over from the Tent Rock, with the steep points of the river open and shut, or touching. From 11 or 12 fathoms to 16, 17, 19, 21, 21 $\frac{1}{2}$, 24 $\frac{1}{2}$, 27, 29, 33, and 40 fathoms, with the bluff point (on the north side of the river) EbS $\frac{1}{2}$ S. and Tent Rock S $\frac{1}{2}$ E. Without this no soundings.

No ship should let go an \rightarrow in more than 15 or 16 fathoms, unless it is with the Tent Rock bearing S $\frac{1}{2}$ E. and then in not more than 18 or 20 fathoms; for the bank goes off very suddenly in most places, from 20 or 24 fathoms, to no soundings. The Tent Rock bearing from S $\frac{1}{2}$ E. to S $\frac{1}{2}$ W. in from 8 to 12 fathoms water, is the best place for a ship to lie in; for there is good ground and most drift.

Here you may get wood and water. You water in the river, at the mouth of which there is a bar, with only 2 feet at low water. It flows here at full and change NEbN. and SWbS. and perpendicularly 8 feet at spring-tides. Here you get plenty of good beef, mutton, and fowls, and other refreshments, at reasonable rates. The inhabitants are civil; but, if affronted, are of a revengeful disposition. They are great beggars, and will over-reach you in trade if they can, and are a little inclined to thieving. Vegetables are very scarce at this place. The latitude of this Bay is $23^{\circ} 40'S$. and longitude $44^{\circ} 20'E$. of London.

CCLXVIII. DIRECTIONS for Ships that go the OUTWARD PASSAGE to INDIA; or for those that are bound to CHINA, through the STRAITS of LOMBOC, BALLY, or SUNDA; as communicated to Mr. Nichelson by an experienced EAST-INDIA Commander.

A ship being in soundings off Cape Lagullas in May, June, July, or August, and bound the outward Passage, latitude $37^{\circ} S$. or $37^{\circ} 30'S$. is high enough to run down the easting. In this latitude you will have strong gales from WSW. to SSW. and NW. and in running to the eastward you will make but little alteration in the variation in sailing many degrees. In latitude $37^{\circ} 30'S$. and longitude made from Cape Lagullas, $33^{\circ} E$. there was $23^{\circ} 18'$ west variation, 1760. In latitude $37^{\circ} 33'S$. and longitude made from Cape Lagullas, $47^{\circ} 14'E$. there was variation $21^{\circ} 21' W$. 1760. About 7 to the westward of the Islands St. Paul and Amsterdam, the present variation is $21^{\circ} 30' W$.

A ship that intends to make the Island St. Paul, must steer to the eastward, and keep in latitude $37^{\circ} 30'S$. or $37^{\circ} 35'S$. Keeping in this latitude will carry you clear of St. Paul's, in the night or day, and yet will carry you fairly in sight of it.

St. Paul's, the northernmost of these two islands, is a small but an high island, and may be seen at a great distance in clear weather; its latitude $37^{\circ} 52'S$. longitude, by run from Cape Lagullas, $54^{\circ} 23'E$. (from London, $74^{\circ} 38'E$). There were $18^{\circ} 45'$, or 19° west variation near these islands, 1760. Later observations make the longitude of St. Paul's $75^{\circ} 30'E$.

Ships that endeavour to make St. Paul's keep to the northward of it, in latitude $37^{\circ} 30'S$. or $37^{\circ} 35'S$. In this latitude you may plainly see St. Paul's bearing SbE. S. or SbW. of you 6 or 7 leagues. Ships might correct their reckoning, by the variation off those islands, without seeing them; that is to say, a ship being near the latitude of St. Paul, and having $18^{\circ} 45'$, or 19° west

variation,

variation, might be sure she was as far to the eastward as these islands; that is, that she was in the longitude of them; by which they might correct their reckoning as well as if they had seen the islands, and from thence take a fresh departure, and proceed on their voyage.

An experienced and judicious commander in the India service, is said to have several times corrected his reckoning by the variation off the Islands St. Paul and Amsterdam, without seeing them. Allowing the variation at or near these islands to be $18^{\circ} 45' W.$ or $19^{\circ} W.$ when he had this variation he always reckoned himself as far to the eastward in longitude as these islands are, or in the longitude of them. His own account of it is as follows.

When by my variation (said he) I was convinced of being the length of the islands St. Paul and Amsterdam, on examining my reckoning, I was, by account, full 12° to the eastward of the place where the ship was in; accordingly, from $18^{\circ} 45'$ or 19° west variation, I stood full 17° farther to the eastward ere I lowered my latitude under $35^{\circ} S.$ and was careful not to get under the latitude of $26^{\circ} S.$ till I reduced the variation to $7^{\circ} W.$ In latitude $22^{\circ} 30' S.$ I made the Coast of New Holland, variation then $5^{\circ} 20' W.$ and found the error of my reckoning agreeable to the variation.

A contrary instance happened to me this last voyage. When I was bound to Bencoolen, on the Coast of Sumatra; being the same length, with the variation $19^{\circ} W.$ I found myself 5° to the eastward of account; but not being under the necessity of making New Holland, or of running so far to the eastward, I edged away to the northward, after running 10° farther to the eastward, and in the same latitude, $37^{\circ} S.$ or $38^{\circ} S.$ This height I think the best, as the winds hold mostly westerly, and fresh gales; whereas, under latitude $30^{\circ} S.$ they are frequently easterly. I made the land 20 leagues to the eastward of Java Head, and had then $2^{\circ} 30'$ west variation; which again confirmed the error of my reckoning.

A ship having made the Island St. Paul, or Amsterdam, or supposing themselves as far to the eastward by their variation, $18^{\circ} 45'$ or $19^{\circ} W.$ and bound to China through the Straits of Lomboc, or Bally, must steer for and make the Coast of New Holland, and for their guide observe the following directions.

From the Island St. Paul, or from $18^{\circ} 45'$ or 19° west variation, a ship may run 17° or 18° to the eastward before they lower their latitude under $35^{\circ} S.$ and then be careful not to go under latitude $26^{\circ} S.$ till they reduce the variation to $7^{\circ} W.$ and make the Coast of New Holland in latitude $22^{\circ} 30' S.$ variation $5^{\circ} 20' W.$ and have the strictest regard to the variation.

Here

Here I must observe, that till under the latitude of 26° S. the Coast of New Holland must be approached with caution, as there is great danger; though there are many never-failing (and consequently unerring) guides, to warn you of your approach; as great quantities of skuttle-bones, weeds, and drifts; and near the Bank, grampuses playing like seals, and innumerable quantities of tropick birds; but skuttle-fish and weeds are commonly the first marks. The land, in latitude 22° S. and 23° S. is low; the soundings 130 fathoms, mud, about 14 leagues off the coast.

Clouts Island is in general agreed to be in latitude $22^{\circ} 6'$ S. but not determined as to its longitude. From making the Coast of New Holland, and comparing my observation of the variation with their's that have seen it. I am persuaded it does not lie above $1^{\circ} 30'$ or 2° W. from New Holland. It is a very dangerous island; and ships bound through either the Straits of Lomboc, Bally, or Sunda, should be careful in passing the latitude. Its longitude is, by computation, $32^{\circ} 50'$ E. from St. Paul; and from Cape Lagullas $84^{\circ} 26'$ E. Variation near this Island is 6° W. and allowing Clouts Island to lie 2° W. of the Coast of New Holland, the land in latitude of Clouts Island is, in longitude, $34^{\circ} 50'$ from St. Paul.

CCLXIX. DIRECTIONS for the STRAITS of LOMBOC; by the same.

A ship bound through these straits must be sure to make the Coast of New Holland as before-mentioned, and take their departure from it in latitude $19^{\circ} 20'$ S. or thereabout, to make the Coast of Cumbava, a little to the eastward of the Straits of Allas. The land hereabout is easily known; for the Coast of Cumbava is very high and irregular land. On Lomboc there is an high and remarkable peak; which mountain is best seen through the Straits of Allas, being nearest that side. The shore is bold; nor do I know, or have heard of any danger but what is perceptible. Betwixt the Straits of Allas and the Straits of Lomboc, the shore, for the most part, is a sandy beach, with several large straggling rocks bordering the shore, and one seemingly large river. As we neared it, we perceived an immense number of fires. Our distance from the shore I am persuaded, did not exceed 3 or 4 leagues for full 50 leagues that we coasted it; and as we approached the Straits, little more than 3 or 4 miles.

In the entrance of the Straits of Lomboc (but nearest the Bally shore) is a large island, called Banditti, the ridge of which is like a barn, appearing (at the distance it is first seen at) sharp at top; the sides chalky, like the cliffs of our Forelands.

Forelands. Off the ends of Banditti (as you near it, and as you open the passage betwixt that and Bally, in passing the NE. end) there are many rocks, or little islands: at the same time you will see a deep bay at the bottom of a large mountain, called the Peak of Bally, which takes its spring from the west side of these straits. Were there no other guide, the Peaks of Lombod and Bally distinguish these from any other, as neither those of Allas or Bally have such on both sides.

These straits are extremely steep on either shore; and in the fairest and safest passage for any ship there are no soundings. The great rippings you will see in entering those straits are uncommon, and have caused the generality of people to form dreadful ideas of there being rapid tides, which (joined to the want of soundings, and being liable to be becalmed by the high land) makes them dread apparent danger as real.

The straits are short, as the east point of Bally may be seen from Banditti Island. There is a flux and reflux, but I could not learn the flowings (or time of high water, at full and change). A ship not hauling too soon round Lombod, but keeping mid-way betwixt Banditti and Lombod, let the stream be which way it will, can be in no danger; and if it blows, it will soon carry it clear. In light winds it would not be adviseable to haul too soon in for the Bally shore, till well past Banditti Island; and then to round Bally Point pretty close, as the shore is bold and very clear.

Lest any be tempted, from the inviting appearance of Bally Bay, without trial of the soundings, to enter it, I think it necessary to inform them, I am of opinion there is no going for a ship. I sent my boats a sounding, about 2 miles from the shore, and had no soundings; and not being satisfied (as I saw several prows in the bottom of the Bay, near the shore) I went the day following myself, and not a mile from the shore, on the north side, had 150 fathoms, rocky ground, and within a little more than a cable's length, 68 fathoms, coral.

CCLXX. DIRECTIONS for going through the STRAITS of BALLY, by the same.

By the draughts of these straits, and views of the hills, any one may know the entrance of these straits. The principal care is in securing the land-fall from New Holland; for it is esteemed, and I believe it to be, very impracticable to beat up, though they should fall but 10 leagues to leeward, because the current and winds set hereabout as the shore lies.

Ballambouang

Ballambouang cannot be mistaken by the draught. You may \rightarrow , with Goningham south, in 6 or 7 fathoms water; after you get this length, it will be very necessary to attend the shift of the stream, so as to take the beginning of it to weigh with, which, with the assistance of your boats (though it should be calm) will carry you through. Keep nearly mid-channel, and when you get up with Gilliboang you will meet with regular soundings.

The tides here, set stronger than those I have met with in any other straits, having found them to run 6 knots an hour: care therefore should be had not to come too close to any of the points, as the tide rounds the bays very strong. I have experienced the hazard of it in some ships for want of this attention.

I have particularly remarked on these coasts, that betwixt the land and sea winds in these straits (as well as amongst the islands betwixt them and Borneo) before a shift of the stream, a calm has succeeded. This, if properly noticed, when there is \rightarrow ing ground, may secure what is got, besides preventing danger.

Passing these straits for China, I took particular notice, that the shoals are laid down very well in the Waggoner, betwixt the straits and Madura, except that between Gilion and Pondy. This reef is very dangerous, being covered at high water, and in the SE. monsoon it is at no time very visible: ships that pass betwixt Pondy and Gilion must go very near it; yet the passage is very good on either side of the shoal, when it can be seen, or its situation is well known. When the reef bears $S31^{\circ}E.$ the SE. part of Madura bears $N17^{\circ}E.$ and the south part of Gilion, $S35^{\circ}E.$

In turning into the channel, betwixt the islands and Madura, for Zamonap, you may stand to the islands to 13 or 14 fathoms, and toward Madura side to 10 fathoms; but you cannot enter the Bay of Zamonap. You may \rightarrow before the Bay, or the north shore, in 6 or 7 fathoms water; here you may get fresh water, and other refreshments, of the Dutch, who have a fort here. Close round the point, in the Bay, there are several springs.

The Osterly \rightarrow ed in 5 fathoms, blue mud; the south point of Zamonap, $W13^{\circ}S.$ the point that forms the Bay of ditto, $N23^{\circ}W.$ the Dutch Fort, $N33^{\circ}W.$ the SE. part of Madura, E. Gilion Island, $E_1S.$ distant from the nearest shore, $2\frac{1}{2}$ miles.

To go between Pondy and Madura, you must keep the Pondy shore close on board; for it is very flat, for more than $\frac{3}{4}$ over, betwixt Madura and Pondy. You will not have less than 11 or 12 fathoms within a mile of Pondy. In passing Gilion Island, I would not haul up for Pondy till I was the length of the

the west end, and then steer for the point of the island. If you should shoal to 4 or 5 fathoms, as you haul to the island, you will deepen.

CCLXXI. DIRECTIONS *for the Back of* BANCA.

From Pondy, for the passage betwixt Borneo and Billiton, after leaving Pondy I would steer NWbW. to get sight of the island Lubec; this course will give it a good birth, for on the east side there are very dangerous and extensive reefs. From thence, steering NW. will carry you clear of a large reef of rocks, that lie in latitude $3^{\circ} 35'S$. this reef is likewise extremely dangerous, having 16 and 20 fathoms, in many places, close to them, and the highest not 3 feet above the surface of the water; therefore, if it cannot be passed in the day, I would advise you to \rightarrow .

From this latitude steer NNW. to latitude $1^{\circ} 40'S$. then you will make a very high island, with a great chain of small islands. Betwixt latitude $3^{\circ} 4'S$. and $1^{\circ} 40'S$. the soundings are from 22 to 18 fathoms, sand, with some few casts, muddy soundings, extremely regular; but when you come to pass this latitude, namely, $1^{\circ} 40'S$. you will meet with soundings 18 fathoms, fine red sand. Leaving the high land on your starboard side, steer NW. or rather westerly: this will carry you in sight of Pulo Auro; the soundings regular, from 18 fathoms increasing to 30 fathoms. As you near the China Seas, sand mixed with mud. It may be you may see the Holy Spirits, but I know no danger near them. I have seen them 7 or 8 leagues off. Thus far the directions communicated to Mr. Nichelson, by the commander of an East-India ship.

CCLXXII. DIRECTIONS *for the* STRAITS *of* SUNDA.

A ship being off the islands St. Paul and Amsterdam, or near them, in variation $19^{\circ}W$. or variation $20^{\circ}W$. and bound to China, through the Straits of Sunda, is not under the necessity of making the Coast of New Holland, or running so far to the eastward; but may run 10° or 11° farther to the eastward in latitude $37^{\circ} 30'S$. or latitude $38^{\circ}S$. Having made 10° or 11° easting from St. Paul's, and in the above latitude, you may then edge away to the northward, and will then decrease your variation pretty fast. In latitude $34^{\circ} 46'S$. and longitude, made from St. Paul's, $13^{\circ} 26'E$. you will have $14^{\circ} 30'W$. variation.

In latitude 25° or 26° S. and longitude, made from St. Paul's, $27^{\circ} 30'$ E. or hereabout, you will meet the SE. trade winds, strong gales; and in latitude 10° S. longitude made from St. Paul's 33° E. you will have variation $2^{\circ} 30'$ W. With this variation you will make the land in latitude $8^{\circ} 16'$ S. 20 or 25 leagues to the eastward of Java Head; and all ships, bound through the Straits of Sunda, should take care to fall in with the land to the eastward of Java Head. Ships, for want of proper attention to the variation, have fallen in to the westward of the Straits of Sunda, and have been obliged to go through the Straits of Malacca, with great loss of time.

As you approach this part of the Coast of Java, you will see a great number of birds like boobies, and drifts of bamboos, which are certain tokens that you are near the coast: but let the variation be your guide; take care not to decrease it below $2^{\circ} 30'$ W. before you make the land of Java, and you cannot err. Endeavour to make the land in latitude 8° , or $8^{\circ} 15'$ S.

In sight of Java, in latitude $7^{\circ} 15'$ S. the extremes of the land bearing from NEbN. to N $\frac{1}{2}$ W. distance 10 or 12 leagues, variation $2^{\circ} 5'$, or $2^{\circ} 8'$ W. Between the west end or west point of Java and Prince's island, is the best passage into the Straits of Sunda, having soundings on both sides; especially along the Java side, there is all along good \rightarrow ing from 20 to 25 and 30 fathoms water. The course through, between Prince's Island and Java, is ENE. northerly, being a fair channel; no danger but what is visible to the eye.

In these Straits, between Prince's Island and the Sumatra shore, there is very deep water, especially toward the Sumatra shore; in some places no soundings, whereas all along the Java side there is good \rightarrow ing, as before-mentioned; so that it is best to keep along the Java side. Java Head latitude $6^{\circ} 40'$ S. These are Mr. Nichelson's additional Directions.

CCLXXIII. DIRECTIONS for SHIPS bound to INDIA, or CHINA, early in the Season.

Ships bound to India, or China, early in the season, and going round the Cape of Good Hope in the months of March or April, must not come near the Cape of Good Hope; for at the Cape, and all along the coast to the eastward of the Cape, at this time of the year, the SE. winds prevail, and frequently blow pretty strong. Such ships bound to India, or China, at that time of the year, must keep to the southward, in latitude 39° or 40° S. there they will have fresh and steady gales at WSW. SW. and NW. with which they will quickly run down their easting.

They

They may see Gough's Island, which is high land, and lies in latitude $40^{\circ} 15' S.$ and longitude $3^{\circ} 23' E.$ from the Lizard, or $1^{\circ} 57' W.$ from London. They should keep in that high latitude till they draw near the longitude of the Islands St. Paul and Amsterdam. They may either make those islands, or go so near them as to correct their longitude or reckoning by the variation, as before-mentioned; and they will probably have a quick passage to India, or to either of the straits, which ever they are bound to. After taking their departure from St. Paul or Amsterdam, they may proceed according to former directions.

Captain Vincent, in the *Osterly*, in the year 1758, being early in the season, kept to the southward in latitude $40^{\circ} S.$ and run a great many degrees to the eastward in this parallel of latitude, and had the highest variation he ever found in the Indian Seas, viz. $27^{\circ} W.$ He made the island called Gough's Island (which is high land, taking its name from Captain Gough, who, it is supposed, was the first that ever saw it). Captain Gough saw it in 1715; Captain Vincent in the year 1758, and made it near the same latitude and longitude that Captain Gough did; that is, in latitude $40^{\circ} 15' S.$ longitude $3^{\circ} 23' E.$ from the Lizard; though Captain Vincent is persuaded it lies to the westward of the Lizard, by his finding his reckoning several degrees a-head of the ship. This island is little known to the generality of people that go this track; and it is a pity but its exact situation was ascertained.

CCLXXIV. DIRECTIONS for SHIPS bound to INDIA, passing the CAPE of GOOD HOPE, late in the Season.

Ships off the Cape of Good Hope, or in soundings off Cape Lagullas, in the latter part of the season (as in September, or any time between September and April) and bound to India, must go the track before-mentioned; and run down their easting in latitude $37^{\circ} 38' S.$ making the Island St. Paul, or Amsterdam; and from thence take a fresh departure, but they need not make so much easting as ships bound to the Straits of Sunda. From St. Paul and Amsterdam Isles they may run down their northing and easting together, and will decrease the variation very fast as they run to the northward.

In latitude $25^{\circ} S.$ they will meet with the SE. trade-winds; and in latitude $10^{\circ} 30' S.$ they will have reduced the variation to $30^{\circ} W.$ On the line there is $38'$ or $45' E.$ variation, and from $40'$ to $50' E.$ or thereabout all over the Indian Seas; at least this was the state of the variation there in 1764.

From latitude $10^{\circ} 30'S.$ to the Line, in the months of November, December, January, February, and frequently in March, you will meet with fresh gales of wind from SW. to NW. with squally weather and much rain. Here ships may run down their easting very fast from latitude $10^{\circ}S.$ to the Line. Ships that want to run down their easting, should take care to do so before they cross the Line; for as soon as they cross the Line, and get into north latitude, they lose the fresh westerly winds which they had from latitude $10^{\circ}S.$ to the Line. In latitude $1^{\circ}N.$ they will meet the NE. monsoon, which blows constantly in the Indian Seas, from October to April, between NEbN. and ENE.

Let a ship be bound to what part of India she will, in this season, they should endeavour to keep as far to the eastward as Acheen Head. If bound to Bengal, keep to the eastward of the Nicobar and Andaman Islands, and along the Arrakan shore, till they can stretch over for Ballafore Road. If bound to Madras, they may stretch over from Acheen Head, and fetch their port very well, taking care to fall well to the northward of it, on account of the winds being mostly northerly, and the current running strong to the southward. Should a ship fall in to the southward of her port, they will lose much time, and have much trouble, before they can gain their port.

CCLXXV. DIRECTIONS *for SAILING toward CHINA, through the STRAITS of SUNDA, BANCA, &c.*

From what hath been delivered in the former part of this treatise, it may be observed, that throughout the Indian Seas, to the northward of the Equinoctial Line, the winds are divided into the eastern and western monsoons; that the former commonly reigns from October to March, and the latter the remaining part of the year.

In the eastern ocean, between the Cape of Good Hope and the Land of Concord on the Coast of New Holland, to the southward of the 25^{th} degree of south latitude, the winds blow from the westward, most part of the year, except that in January, February, and March, near the Cape of Good Hope, or about 200 leagues from the east and west coasts, the winds come oftener from the eastward than from the westward.

Between latitude $35^{\circ}S.$ and latitude $28^{\circ}S.$ you have variable winds; but beyond, as far as the parallel of 10° or 11° south latitude, the winds blow from SE. to E. without any considerable interruption. They are usually called general winds, because they blow thus, not only in the eastern ocean, but in the other
southern

southern seas ; only there, their power extends nearly as far as the Equator ; whereas in the eastern ocean they seem confined between the parallels of 18° and 10° south latitude.

From latitude 10° S. to the Equinoctial, the winds divide the year into two seasons or different monsoons, blowing about 6 months one way, and 6 the other. Although this difference is the same throughout the Indian Ocean ; yet the winds have a contrary direction at the same time ; and while they have the eastern monsoon in the northern hemisphere, the western blows in the opposite part. The eastern monsoon begins to the southward of the Equinoctial in April, and continues till November ; then the western succeeds, and continues till April.

The months of April and November (in which the monsoons break up) are subject to variable winds ; because they do not change all of a sudden.

Among the Sunda Islands, as far as Timore and Solore, the westerly winds, which begin in November, bring bad weather with them ; in December they blow stronger, and are accompanied with rain : but in January they are in their height, blowing excessively hard, with thunder, lightning, and rain ; these continue till the middle of February, when they begin to die away, and are quite spent at the end of March. The rains and tempests are not every year alike ; some years they are both of them more moderate.

In April, with the shifting of the winds, comes fair weather, with only some squalls of short continuance. In May the winds settle in the eastern board. In June and July they blow stronger, but with a clear and serene sky, which continues till the end of September. In October they grow faint and variable, till the return of the western monsoon.

The currents during each monsoon, set with the winds, excepting in April and November ; then they are contrary, and their velocity increases with the winds, as also at the full and change of the moon.

The currents in the western monsoon are much stronger than those of the eastern ; for this reason the ships which sail from Batavia, from the Islands of Timore, Solore, and from the Moluccas, in the eastern monsoons, find less difficulty than those which return from thence in the western monsoons. For the same reason the ships which go from Europe to Batavia, the Gulf of Siam, China, &c. go through the Straits of Sunda, easier in May, June, July, and August, than those which return in December, January, and February.

The

The winds, during the eastern monsoon, generally blow from SSE. to E. and from NNW. to W. in the western monsoon.

Near the Equinoctial Line the winds are much more variable, and consequently less to be depended on. For this inconstancy two causes may be assigned; the first, because to the northward of the Line the monsoons are opposite; the other may arise from the frequent rains near the Line, especially at Borneo, where it rains incessantly eleven months in the year.

At the Moluccas the monsoons are the same as at Java and the adjacent islands, with this difference only, that in the Moluccas they call the western monsoon the northern, and the eastern the southern; because, during the former, the winds blow more generally from NNW. than from the W. and during the latter from SSE. than E.

The northern monsoon, at the Moluccas, brings much rain, and the southern great droughts. It is the same at Java, and the other adjacent islands; but at Borneo there is very little difference.

Having shewn the general rules for the winds and currents in this part of the southern hemisphere, it is to be determined, in consequence thereof, the course ships must steer, to arrive at their destined ports.

When you take your departure from the Cape of Good Hope, or from the foundings of the bank, increase your latitude to 37° S. or 38° S. to make advantage of the westerly winds, which are more constant there than in a lower latitude, and which generally blow from NW. to WSW. Though they mostly blow the strongest in the months of June, July, and August, it happens, that in April and May (which in those parts should be looked upon as the end of autumn) you sometimes have violent squalls of wind. These gales are generally foreseen by black clouds which obscure the horizon from NW. to W.

As soon as you perceive these presages, prepare for their reception, because they come on apace, and are sometimes accompanied with whirlwinds. They begin to blow violently from WNW. to W. then they shift with fury to the SW. but when they get to south, the wind abates, and it falls calm all of a sudden; but the sea (agitated and raised by the boisterous winds) is not so soon composed; this is frequently of worse consequence than the height of the gale.

Several mariners have imagined it possible to foretell these sudden calms by a sensible interruption, or diminution, and by a clearing-up which precedes them; but this opinion is contradicted by experience: it is not to be depended on;

on: therefore every navigator should avoid (by a skilful precaution) the sad accidents which always follow these events when they are unexpected, and consequently not provided against.

About 150 leagues to the eastward of the Cape of Good Hope, you frequently meet with hard gales of wind, accompanied with much thunder, lightening, and rain, insomuch that they rarely have a clear sky for two days together; and this continues so for 300 leagues further. Several persons who have frequented these seas, have observed that it extends as far as the meridian which passes through the eastern part of the Island Madagascar, or 51° E. longitude from London.

In the south-eastern ocean, the different variation of the magnetic needle is so regular in sailing from west to east, or from east to west, that you may thereby correct errors in your account of longitude; but then the observation must be taken with a good instrument, and at the time when the ship has not too great a motion.

At the Cape of Good Hope, and to the southward, near its meridian, the variation observed was 16° W. 1740, and sailing to the eastward it encreased, till off the Island Madagascar, to the southward, where it was $25^{\circ} 30'$ W. afterward it decreased on approaching the Coast of New Holland and the Islands of Sunda.

When you are in latitude 37° S. you must keep therein, steering east, for about 1100 leagues, or till you have made about 70° east longitude from the Cape of Good Hope. It will not be absolutely necessary to see the island of St. Paul or Amsterdam, though the sight thereof will greatly assist you in rectifying your account, and shaping your course afterward. They are situate $56^{\circ} 30'$ to the eastward of this Cape. The former is the northernmost, and may be plainly seen 12 leagues at sea. It is about 6 or 7 leagues in circumference. Its west end rises very high. The observations of several navigators, compared together, fix its latitude in $37^{\circ} 50'$ S.

About 6 leagues to the southward of this lies the Island of St. Paul, which is smaller than that of Amsterdam. The variation there was observed $18^{\circ} 30'$ W. on board the Defence and other ships, in 1742.

If, before you have made the longitude prescribed, an extraordinary change of the winds should prevent your keeping your course to the eastward, it will be proper, in standing to the northward, not to pass the latitude of 35° S. because under that latitude you frequently have the winds from NE. to E. Several ships, for want of observing this, after losing a deal of time in beating to
windward

windward, have been obliged to run to the southward, as far as latitude 40° S. to regain the westerly winds. This makes it evident, that in case of contrary winds you should rather put the head to the southward than the northward.

When you have made 70° east longitude from the Cape, you edge away by degrees to the northward, in such manner as to be able to pass the Tropic of Capricorn in 83° E. longitude. If, before you sail to the northward, you can observe the variation, you will be more certain of the position you are in. By examining some latter journals of this navigation, the variation, 70° east of the Cape, was $12^{\circ} 30'$ W. or 13° , in 1740; but now it is altered. It is advisable to make the Island of St. Paul, if you are bound to the Straits of Bally, or any other place to the eastward of those Straits.

From the Tropic of Capricorn steer NNE. to go 60 leagues to the westward of the Trial Rocks, which are a cluster of various high rocks above and under water, extending about 15 leagues from east to west, and 5 leagues from north to south. These were discovered by a Dutch ship in 1719: their existence was afterward confirmed by a sloop sent from Batavia to determine the exact situation, which was found in latitude $19^{\circ} 30'$ S. and 80 leagues west of New Holland. It will be most prudent to pass their latitude in the day-time, because you may fall foul of them in the night, when you reckon yourself a good way off.

In latitude $22^{\circ} 6'$ S. and $74^{\circ} 30'$ E. of the Cape of Good Hope, lies Cloate's Island.

The first account we have of this island is from Mr. Nash, of the ship House of Austria, from Ostend for China, in 1719. They saw it first (being very clear weather) about 3 A. M. on which they immediately brought to and founded, but had no ground with 100 fathoms, though not above 4 miles off shore (some accounts say, they had no ground within 2 miles of the island). The day before, and several days after, they observed an incredible quantity of sea-weeds, like those from the Gulf of Florida, and small birds like lapwings, both in size and flight. This island cannot be seen far, even in clear weather, and lies NEbN. and SWbS. about 32 leagues in length, with terrible breakers from each end, running about 3 miles into the sea. It lies in latitude 22° S. and 92° E. longitude from the Cape. From hence they made $3^{\circ} 6'$ easting to the Island Bally, and $7^{\circ} 26'$ westing to Java Head. As they did not find any account of it in their books or charts, they gave it the name of Cloate's Island, in honour of a Flemish Baron, probably one of their owners.

The

The Haeflingfield fell in with it in 1743; they saw it at day-light, bearing from SE $\frac{1}{2}$ S. to EbS. about 6 leagues. They report it lies NE. and SW. 7 or 8 leagues in length, of a moderate height, and pretty level, with a gradual slope to each end, from whence they saw the breakers. By their accounts, they make it in latitude $22^{\circ} 7'$ S. and longitude $32^{\circ} 49'$ E. from the Island St. Paul, and in $84^{\circ} 26'$ E. longitude from Cape Lagullas, their variation the morning before was $6^{\circ} 17'$ N. westerly. From this island they steered nearly north for 7 days; then they made the land of Java, in latitude $8^{\circ} \frac{1}{2}'$ and $44'$ W. meridian distance, and in 3 days more made Java Head, in $7^{\circ} 12'$ W. longitude from Cloate's Island.

By comparing these accounts together, we may observe the variation does not alter very much hereabout; and although they differ about 7° of longitude in their reckonings from the Cape (which is not to be wondered at in so long a run, when sometimes they shall differ half as much on board the same ship) yet they agree as near as can be expected in their run from thence to Java Head; so that we may conclude the difference of meridians between this island and Java Head to be about $7^{\circ} 20'$.

That it does not lie above 3° or 4° at most, from the Coast of New-Holland, appears from the following reasons. The ship Prince of Wales, in 1738, the evening before they made this coast (in the latitude of Cloate's Island) observed the variation $5^{\circ} 55'$ N. westerly, being then at the largest computation about 38 leagues from the land; also the said ship made but $4^{\circ} \frac{1}{2}'$ meridian distance from thence to the west end of Cambava, lying according to these charts, much about 12° to the eastward of Java Head, which agrees nearly with the other two ships run's; for by deducting the $4^{\circ} \frac{1}{2}'$ easting, there remains $7^{\circ} \frac{1}{2}'$ westing to Java Head.

Here it may not be amiss to insert some account of this land from Captain Pelly. At first sight it made like small islands, so very low that it could not be seen off the deck: he saw only a great smoke arising from it, and set it only at 5 or 6 leagues distance. He also sounded, but had no ground with 160 fathoms; nor did he find any sign of soundings as he ran in toward it, the water being not at all discoloured. Standing in ENE. he raised the land, found it long and level, about the height of the Lizard, that might be seen 8 or 10 leagues, and believed that the land like islands, joined to the rest. He made about $39^{\circ} \frac{1}{4}'$ east longitude from the Island St. Paul home to this land. It was discovered by Captain Nash, who reported that it extended about 10

11 leagues NEbN. and SWbS. and that it might be seen 10 or 12 leagues at sea.

Having passed the Trial Rocks, you must continue your course NNE½E. till within sight of Java; so you will make the land about 50 leagues to the eastward of the Straits of Sunda; and this is distance enough to prevent any error to the westward. If you follow these directions, you generally find the error on the other side. The journals confirm this, that the ships which sail from the Cape of Good Hope to Java, by following nearly this track, have fallen in with this land further to the eastward than they reckoned; but observe, that it is even dangerous sometimes to run too far to the eastward, on account of the difficulty you have to get out of the bays, formed by the Coasts of New Holland, and the islands to the eastward of Java; there you often meet with frequent calms and currents, which run with rapidity through the channels of these islands.

It is not thus with ships which sail from the islands of France and Bourbon, for the Straits of Sunda; their error, from whatever cause it arises, is generally 70 leagues to the westward. It will be proper for navigators who make this voyage, to take care to prevent this difference, by standing so far to the eastward, as that, after passing the Trials, you must make good a NEbN. course, till within sight of the Coast of Java.

In either of these cases, if, after all the precautions necessary, you should fall in to the westward, and in $7^{\circ} 30'$ south latitude you do not see the land, haul upon the wind, to get to the eastward till within sight of it.

Seventy-seven leagues to the southward of the west point of Java, or Java Head, in latitude $10^{\circ} 22'S$. lies an island, called Christmas Island by the English, and Money Island by the Dutch. Some years since a ship of that nation run aground there in the night, and was wrecked. Its longitude is $105^{\circ} 55'E$. of London, and variation $2^{\circ} 55'W$.

This island is high, very woody and of a very beautiful appearance, affording fresh water, land tortoises, and wild hogs. It is said to be safe all about, and that on the north side there is ~~4~~ing in 14 or 15 fathoms. It may be seen 10 leagues in clear weather. There are many birds flying about it,

The Killing, or Coco Islands, were observed by Captain Hudson to lie in the latitude of $11^{\circ} 50'S$. who also made $6^{\circ} 50'$ meridian distance west from Java Head. They are small broken islands, and not to be seen above 4 leagues. They are covered all over with trees, and have abundance of breakers about them. They extend about $2\frac{1}{2}$ leagues N. and S. but not so much E. and W.

When

When you fall in with the south coast of Java, there is no judging with certainty (for want of good remarks) of your distance from the Straits of Sunda; experience only can enable you to distinguish this. The land near the shore is generally very woody. There are several bays and some islands, or rocks, which border the coast, and seem to render it dangerous landing there. The bottom is not proper for \rightarrow ing, but very near the shore. In land it is covered with high mountains, especially the east part; there they are very craggy.

Being in sight of this coast, when you are about 4 or 5 leagues off it, fall along by it, lying generally about EbS. and WbN. except near Wine-cup Point; there it trenches a little more north and south.

Wine-cup Point lies in latitude $7^{\circ} 28'S$, and may be known, coming from the eastward, by the coast's seeming to terminate there. The double land, near the shore, lowers toward this point, which is low and covered with trees. At its extremity there is a little sandy island close to the water's edge; and the coast in this part is encompassed with breakers a quarter of a league off.

From Wine-cup Point the coast lies NbE. for 3 leagues, and after forming a bay to the eastward it trenches away again to WbN. as far as the entrance of the Straits of Sunda. In this last extent, about 2 leagues off shore, is a little low island covered with trees, called by the Dutch Trouwers Island, and $3\frac{1}{2}$ leagues WbS. therefrom you meet with Claps's Island (called by the French, Iles des Brisans); this is low and woody, like the former. You may \rightarrow hereabout in 25 or 30 fathoms.

Being past Wine-cup Point, steer WNW. toward Claps's Island, bearing thus about 20 leagues therefrom. As you near it, you may perceive to the north-westward the west point of Java (or Java Head) on which there is a mountain of a moderate height, whose west end lowers more suddenly than the other.

To the eastward of this mountain is another, very much like it in shape and height; between the two is low land, covered with trees. If you come from seaward, and are too far off to perceive this last, the westernmost mountain appears like an island; and when you raise the easternmost, the space between them seems to form the entrance of the straits; then appear the trees, and the low land that unites them.

It is about 7 leagues NWbW. from Claps's Island to the west point of Java or Java Head, which seems to terminate very bluff, it being on a great rock, separated from the foot of the mountain, with which it appears confounded.

Coming from the southward, there are some other little rocks above water, about a quarter of a league off shore; and to the south-eastward thereof a reef upon which the sea breaks.

NNW. 4 leagues from this point, is Capuchin, or the first point of the Straits of Sunda, on the Java side; and at its extremity a rock, with a tree upon it, which navigators call the Friar. The coast between these two points forms a bight, all along which there are several high rocks, resembling, at a distance, boats under the sail.

In the draughts of the Straits of Sunda, the first point of the straits is placed by some 17' more northerly than it should be. By Mr. Herbert's observations, and those of several navigators, its latitude is $6^{\circ} 39'$. If on some draughts you draw a straight line, from the first point to Crakata, or Crockatoe Hill, the east part of Prince's Island will then be between them; whereas, when those two objects are in one, the easternmost point of Prince's Island, instead of being shut in, appears open 2° or 3° .

To the northward you may see the land of Prince's Island, whose SE. part makes the north coast of a little strait, by some called Prince's Straits; the Dutch call it Behouden, or the Safe Passage; by this you enter the Straits of Sunda. At the south point of this island, and 2 leagues NWbN. of the Friar, are several great rocks, called the Carpenters, extending WSW. about a quarter of a league; they are almost close to one another, and steep to, having 60 fathoms close aboard them. All the coast off Prince's Island is equally bold.

One league east of the first point, in a bay on the coast of Java, you find the Little Island Cantaye, called by the English Mew Island, where several ships put in for water and wood. In going at this place, be cautious of a ledge of sunken rocks, which bear about NbW. one mile from the Watering-place. Some charts lay down a bank projecting to the westward, from the north point of this island; but an experienced navigator (M. le Chevalier de la Boissiere) affirms, that at half a quarter of a league from this point he found $6\frac{1}{2}$ fathoms: therefore you need not be too fearful of turning it in this part.

Between the island Cantaye and the First Point, there lies a great rock, or little island.

As the winds, during the monsoon of April and November, generally blow between SSE. and ESE. to enter this strait, you must keep the Coast of Java on board, and go as near the Friar as possible; this rock is safe, and there
appears

appears no danger within a cable's length of it. When you are near it, and it bears NNE. you may perceive, beyond it, in the same direction, a very high hill, like a sugar-loaf, upon the Island Cracata; then the east point of Prince's Island (whereon also is another peak) bears a little more northerly.

Those who intend to put in at Cantaye Island, as soon as they have passed the Friar, stand to windward, to round the north part of this island, at whose extremity is a great steep rock, but no danger about it, it being separated only by a little channel. For conveniency of your boats wooding and watering, you may \rightarrow mid-way between this little island and the Coast of Java, in 18 fathoms, sandy ground; its point bearing between the NW. and W. at the distance of half a league.

This island is not inhabited. The huts, or villages, are on Java, and that a good way from shore. The refreshments to be had at this place are sea tortoises, or turtles, fowls, and cocoa-nuts, which the inhabitants of Prince's Island bring in their proes on board the ships; these commodities are generally scarce, and their price is exorbitant. Upon this island is a stone, with the arms of Holland cut thereon; and an inscription, setting forth, that they have taken possession of it. You get wood on the island, and water opposite thereto, upon Java; it falls in cascades down the hill by the sea side, and is the only water you can get hereabout.

It is necessary, in this season, to prefer the little strait, between the Coast of Java and Prince's Island, to that northward thereof, as it will be exceeding difficult, on account of the winds that blow at this time, to gain the Coast of Java. You should keep this coast on board, not only for the benefit of the winds, but also to get \rightarrow ing ground in case of a calm and a contrary current, which is the reason you cannot succeed on the Coast of Sumatra.

If some ships, after falling to leeward of the Straits of Sunda, have been lucky enough to re-enter through the great channel, they have employed much time in beating against winds and currents; this is enough to prevent your making choice of it.

When you sail from Cantaye Island, keep along shore as far as Welcome, or the Second Point, which may be rounded at $\frac{1}{2}$ of a league distance, and even nearer upon occasion. Within Welcome Bay there are several islands; it extends as far as Pepper Bay, or more properly Pepper Point, the Third Point in the strait, which lies 6 leagues NEbE $\frac{1}{4}$ E. of the Second Point. To the ENE. of this Second Point there is a bank, upon which an English ship run aground; it will be proper for those who are obliged to turn it, in this part, to pay

pay attention thereto. It has but 9 feet water; in some places it stretches to the ENE. and WSW. 2 cables in length, and 1 in breadth. When on it, the northernmost peak on Prince's Island is one with Welcome, or the Second Point, bearing WNW. about 5 miles, and Pepper or the Third Point, NE½E. About a cable's length NNW. from it, there are 19 fathoms.

When you are to the northward of Welcome, or the Second Point, steer NE. for the Fourth, which lies about 14 leagues therefrom on this point of the compass. Having sailed about 9 leagues, you may perceive, to the NEbN. an island of a moderate height, and very uneven, called by navigators Thwart the Way, or the Middle Island, because it is nearly so between the Coasts of Sumatra and Java. This island is about 4 miles long, NEbN. and SWbS. At its SE. point a reef projects a little.

The Island Cantaye being unable to supply ships that stand in need of proper refreshments, or whose condition wants repairing; those who are so circumstanced will do well to ⇨ at Serigny, to the north-eastward of Pepper Bay, at the foot of several high mountains, which are on that side.

To gain this place, having passed the Second Point of the Strait, shape a course toward the Third, which is more extensive than the other, forming several little bays, and containing about 3 leagues in circumference. Within Pepper Island is an island, to the north-westward of which are breakers, which render its approach dangerous; as is the whole Bay.

When you are off Pepper, or the Third Point, about a league distant, you see the little Island Serigny bearing EbN. which, from this situation, is confounded with the Coast of Java near it; it may be known by several great trees upon it, in some places thick, in others scattered and less confused. In sailing toward this island you must take care to keep it always on the starboard side, and to ⇨ about ¾ of a league NNW. thereof: you will then be about the same distance from the village of Serigny, on the Coast of Java, under the declivity of the Second Mountain in Pepper Bay. There are many inhabitants, and a market every day. The governor, who resides there, is dependent on the king of Bantam, and all the country round about belongs to that prince. The Dutch only reserve its trade. The people in general are very selfish, and will buy every kind of merchandize, provided you will sell them at a very low rate, and pay in exchange very dear for their commodities. They appear very affable, but you must be on your guard if you would not be cheated by them. You may set up tents, and send your sick ashore upon the island. There is a reef, about a mile to the northward, which trenches from thence to the shore.

It is about $4\frac{1}{2}$ leagues NbE. from Serigny to the Fourth Point. The land along shore is full of cocoa-nut trees, which are the staple of this country. In some places, and especially beyond the village of Negery, there are several breakers, the farthest of which reaches half a quarter of a league from the shore. Having weighed from Serigny, keep about a league off shore. Notwithstanding the irregular soundings, which increase farther off, there is good \rightarrow ing ground in 20, or at most 30 fathoms: therefore keep within that depth, in case it should fall calm, or you have not wind enough to stem the current, which generally runs in this season to the south-westward.

The Fourth Point has nothing remarkable, except that beyond it the coast runs about a league and a half to the south-eastward, as far as that of Anger or Anjere. The principal village to which navigators have given this name, is situate near the sea-shore, about two miles on this side of the point. Here you may get buffaloes, hogs, fowls, and ducks. Those ships that are short of provisions may put in here. You will be opposite this place when the Middle Island is in one with the high land of Sumatra, about Hog Point: but observe that there is no holding ground between the two points above-mentioned, and that a strong current is sufficient to drive you.

NNE. $1\frac{1}{2}$ half league from Anjere Point, and at the same distance ESE. of the south part of the Middle Island, lies a little round island, covered with trees, commonly called the Bonnet, or Little Cap. This name was given it to distinguish it from another like it, but larger and higher, called the Hat of Brabant, or the Great Cap, bearing N;W. 7 miles off the Bonnet. The latter of these is called by the English the Button.

From Anjere Point till you are past these islands, there is no good \rightarrow ing, but in very deep water; it will not be prudent to leave the Coast of Java, to go between them, but with a fresh breeze, and not, as several ships have done, at the first appearance of wind, which seldom lasts long enough to get to the northward of St. Nicholas Point, Bantam, or the length of the northernmost of these islands. Without this precaution, if it should prove calm, you are driven to and fro by the currents, which hereabout are exceeding rapid, because the channels through which they run are so narrow that they augment their velocity.

To the north-eastward of the Little Cap, it is said there is a dangerous bank extending along the Coast of Java. This is called Brouwer's Sand, and is very dangerous, shoaling very suddenly. The Harrison's long-boat was on this sand, in $1\frac{1}{2}$ fathom, with 4 or 5 fathoms within a cast all round about it; the Cap then

then bore SW½S. Thwart the Way WbN. the Button NW½N. the point of an island near the shore, which shut in Bantam Point, NbE. a very little island, close in shore, ENE. Whether you sail from Anjere Point, or any place on this side of it, you must always leave this island (the Button) to the starboard, and sail between it and the south point of the Middle Island; then pass the Great Cap on the east side, at what distance you think proper. About a mile off the SW. part of this island (the Little Cap) there is a rock 14 feet under water, upon which an English ship damaged her keel. Navigators were a long time ignorant of this danger, several having failed on all sides of this island, without perceiving it; whence it is thought not very extensive. There is also an account of one with 17 feet water on it, from whence the Button bears SEbE. 2 miles.

St. Nicholas Point (called by some Bantam Point, on account of its nearness to the town of that name) bears E½N. 3 leagues from the Great Cap. It seems unnecessary to come near this point, unless upon the appearance of an approaching calm, to secure convenient anchorage. After passing the Great Cap, steer NNE. to get sight of the Two Brothers, 17 leagues therefrom, on this point of the compass, and in latitude 5° 13'S. They are two little islands near each other, and of an equal size and height: they may be seen 6 or 7 leagues, rather by the height of the trees planted thereon, than that of the land. When they bear NbE. and SbW. they make in one.

From each end of these islands are two reefs near the water's edge, which extend half a quarter of a league north and south; and though they encompass also the east and west coasts, you may near them (especially the last) within ¼ of a mile to the westward of them, and have 10 or 11 fathoms, without danger. It is improper to keep too great a distance from them, in order to avoid two shoals, one of which, called the Shabander (from the name of a Dutch ship which narrowly escaped being wrecked here), lies 7 miles WbN½N. of the southernmost island. The ship Jupiter, commanded by M. Deffaudrais du Fresne, struck upon it, returning from China, and had 17 feet of her keel knocked off, which obliged him to go to Batavia to careen. This shoal seems to be scattered in different parts, and to extend further than is generally imagined.

Most of the manuscript charts place this danger at a greater distance from the Two Brothers than it really is: the same error is found with respect to the east coast of Sumatra, from whence these islands are not above 6 or 7 leagues distant.

Two leagues and an half EbN. of the northernmost of the Two Brothers, are two little banks of sand (called Brouwer's Sand) upon which, several persons, who have been near them, affirm they have seen rocks; but as others say nothing of them, it may be presumed that they are covered at high water.

All the Coast of Sumatra, from the Straits of Sunda to the length of the Two Brothers, is high land; and beyond, as far as the Straits of Banca, is low and woody. Along this shore are the mouths of several rivers, the most considerable of which is called Tollong Bouang: there lies before it a great bank; the verge of which is near 3 leagues off; and to the northward thereof is another, projecting still further in some places, and on which are several dry parts. This last is known by a point (which they say is an island) whereon are trees higher than in any other place hereabout; for this reason it is called Great-Tree Island. From thence to the entrance of the Straits of Banca, the coast forms a bight, and extends NbE. 13 or 14 leagues.

By the bearings of this coast you may conclude the Island Lucepara bears NbE. 34 leagues off the Two Brothers; yet the irregularity of the currents which run into or out of the Straits of Banca, together with the ebbing and flowing of the rivers along the Coast of Sumatra, prevent your shaping a direct course from one to the other. The best method is to steer by the soundings as follows.

As soon as you have sight of the Two Brothers, steer such a course as to go about three quarters of a league to the westward of them in 12 or 13 fathoms. From thence steer NNE. in order to keep in 13, 12, and 10 fathoms. If it increases to 15 or 16 fathoms, this is a proof that you are too far off the Coast of Sumatra, to the eastward; if so, you must borrow more from the north, and even from the west, so as to regain the Coast of Sumatra.

On the contrary, if by means of the tides you are driven too near the Island of Sumatra, the depth will decrease to 12, 10, and 8 fathoms: as soon as you have this last depth, stand to the eastward, or \nearrow , if the winds will not permit that, in order to avoid the banks bordering the Coast of Sumatra; the most dangerous, and that which projects the furthest, is off Great Tree Island, before mentioned, called by some Turtle Bank.

In the day-time, and clear weather, you may know your distance from this island, as well by sight thereof as by your soundings; but in the night-time, or hazy weather, it is necessary to keep the lead going.

Y y

When

When you are past Great-Tree Island, as you near Lucepara, the depth decreases very regularly, to $7\frac{1}{2}$ fathoms; then you may see it, in latitude $3^{\circ} 13'S$. It is small and the land is low, but by means of great trees it may be easily seen 6 leagues at sea. You stand toward this island till it bears north about $2\frac{1}{2}$ leagues; and then \rightarrow , if the tide or night will not permit you to get within the straits.

From the south point of the Island Banca extends a shoal near 5 leagues SSW. If for want of following this direction (namely, bringing Lucepara to bear north about $2\frac{1}{2}$ leagues) or if any unforeseen accident should force you on that side; as soon as you perceive it (whether by seeing the land to the northward, or by diminution of the soundings) you must steer WNW. till you get sight of Lucepara. These marks are unnecessary when you are to the eastward thereof, and consequently south of Banca; it is sufficient, in order to be certain of it, that you cannot see the land to the westward.

CCLXXVI. DIRECTIONS concerning a SAND to the westward of the Two BROTHERS, on which the SANDWICH was a-ground in 1749-50.

January 27, got through the Straits of Banca. The 28th in the morning, saw the Two Brothers, then stood in for the Sumatra shore, and at $3\frac{1}{2}$ P. M. run a-ground on a Sand, when had the following bearings. The northernmost part of Sumatra in sight NbW. the southernmost SWbW $\frac{1}{2}$ W. the southernmost of the Two Brothers SEbE $\frac{1}{2}$ E. the northernmost ENE. northerly distance 3 leagues, and from the Sumatra shore 4 leagues.

About 2 A. M. by the water rising a little, got off into 18 feet water, but soon after was fast again. We got off a second time, and soon a-ground a third. By sounding round the ship, found the shoalest water 19 feet, except where she lay, which were only 17 feet, and a little way a-head were 4 or 5 fathoms. Set sails, started water, and threw some lumber over-board; so that with a fresh breeze and a small swell, drove her fairly over by 10 o'clock. The ship thumped excessive hard, but made no water. \rightarrow ed in $4\frac{1}{2}$ fathoms, having been 19 hours from the first grounding to getting clear the third time.

The 30th (after sending the boats to sound, and finding no less than 4 fathoms) made sail again and stood on for about 5 miles; then the ship struck again, but did not stick; on which, \rightarrow ed in $4\frac{1}{2}$ fathoms. The boats were sent out again to the southward, and, to their great joy, found the water deepened gradually to 9 fathoms: this they had about 5 miles from the ship.

CCLXXVII.

CCLXXVII. DIRECTIONS *for the* STRAITS *of* BANCA.

These straits extend about 35 leagues from SE. to NW. The Island of Banca, whence it derives its name, bounds it on the east side ; and part of the Coast of Sumatra on the west. This coast is very marshy, and has no other elevation but the trees, the lower parts of which, near the shore, are washed by the sea. You must not approach it too near, on account of a mud bank that borders it, extending half a league out, and even more in some places.

The Island of Banca is higher : on it are several mountains ; but the most conspicuous are those of Parmissang and Monopin.

The Little Island Lucepara (before-mentioned) lies at the SE. part of these straits, and forms two channels to enter it ; the eastern one is very wide, and seems to make an exceeding fine passage, but it is not frequented. It hath been said, that this is the best passage, the least depth being 8 fathoms ; but it seems to require the confirmation of experience ; for all the ships, to this day, prefer the western channel, between the Coasts of Sumatra and Lucepara, which is about 3 leagues broad. Those who have the charge of ships should be particularly careful in this part, on account of its shoalness : several send their boat a-head to sound, which is very prudent ; but without this precaution it will be easy to determine the track which you must keep in this passage, with regard to Lucepara and the Coast of Sumatra.

Observe, that the tides run very strong and irregular throughout the Straits of Banca ; the flood sets to the northward, according to the channel it runs through ; the ebb to the southward in like manner. The continuance of either of them cannot be exactly ascertained ; oftentimes the ebb lasts 16 hours without interruption, and sometimes less ; you cannot calculate the beginning nor end thereof. It sufficeth to attend to the different changes, and to \rightarrow when there is not wind enough to stem a contrary tide.

If you set out from the place where Lucepara bears north, distance about 2½ leagues, where is convenient \rightarrow age ; from thence steer WNW. till you bring Lucepara to bear NNE. then NW. till it bears NE. In this track you find 5½ or 6 fathoms, soft mud. If your soundings are hard sand, in this passage, it always denotes being near the banks that encompass Lucepara ; therefore keep more to the westward, in order to get into mud soundings : this is the proper channel.

The Island Lucepara bearing NE. steer NWbN. till it bears ENE. then NNW. and if it be necessary, NbW. so as to give the Coast of Sumatra a

good birth, which you must then keep at a league, or a league and a quarter distance. This will carry you clear of the bank which lies NWbN. of Lucepara, and SE. of the First Point, with only 10 feet water, and on which you may see the breakers at low water. This is the shoal that the Cruttenden, Captain Bowland, was upon in 1765. It extends about NW. and SE. 2 leagues. There is another small one, which lies a little to the westward of the middle part of this, where the Cruttenden was, and about south from the NW. which is the shoalest part. There is also another small bank, to the southward of these, on which Capt. Charles Newton, in the Concord, was a-ground. When Lucepara bore SSE $\frac{1}{2}$ E. and the first point of Sumatra NNW. they had soundings as fast as they could heave the lead, from 10, 7, 4, 3 fathoms, to 10 feet. You must carefully avoid bringing Lucepara to the southward of SEbS. till the first point bears NWbW. then you are clear of these banks, and deepen your water apace, though you steer NNE.

You must come no nearer the Coast of Sumatra, if you would not risque the running upon the bank which borders this coast, and whose verge runs out half a league, or more in some places. Several ships, by ranging this coast too near, have met with this accident, and have not been able to get off again without great difficulty.

As you near the First Point of the Straits, (of which there are four on the Coast of Sumatra) the depth increases to 12 fathoms, mud; and beyond that it is greater.

When Lucepara bears east of you, if the weather is clear, you may easily perceive the mountains of Parmissang, on the Island of Banca, which lie NbW. of the First Point of the Straits.

According to the observation of several navigators, the depths in the passage between Lucepara and Sumatra vary at different times, at the same bearings off Lucepara, and at the same distance. Upon examining several journals, notice has been taken of this inequality. Several ships found 4 fathoms in the same place (according to their estimation) where others had found 6 at another time: this may be occasioned by its being nearer to, or further from, the time of high water; or by the inundations of rivers, occasioned by frequent and heavy rains; or the difference of judgment, in the estimation of the distance from Lucepara. On the Coast of Sumatra, where it is very shoal, if instead of 2 leagues WSW. you are 3 $\frac{1}{2}$ leagues from it, it is not surprising to find there less water. When this happens, you must stand toward Lucepara for deeper water.

It is reckoned $8\frac{1}{2}$ leagues NWbN. from the first Point of these Straits to the second. The coast between them forms two False Points, so called to distinguish them from the principal ones. This part is also bordered with a mud bank, which projects a mile, so that the coast may be ranged at 2 miles without danger. The depths (though unequal) are generally about 15, 18, and 20 fathoms.

Upon the extremity of the Second Point is a tree, which seems a little separate from it; so that at the first sight you would take it for a ship at \rightarrow . The coast beyond forms a great bay: this seems to have escaped the notice of authors, as well as the mud bank, which fills up the whole extent. Several navigators have imagined, that off this extremity was a little bank, between which you might pass; but sounding from the Second Point, as far and farther than this pretended bank, this bay was very shoal, so that most of the bank might be seen at low water. The course from the Second to the Third Point was NW $\frac{1}{2}$ N.

The ship *Lynn*, in 1733, fell in with a shoal, bearing NEbE. about 2 cables length distance; at which time the Second Point of Sumatra bore WSW. about 7 miles: then they had 7 fathoms; the east before had no ground with the hand-lead. They took this shoal for the same as is here mentioned, though they were rather nearer the Banca than the Sumatra shore; and most ships may go to the westward of it, though they imagine they go to the eastward. In the day-time it is visible enough, and easily avoided; but it must be dangerous in the night.

The master of a Dutch sloop gave an account, on board the *London*, in these Straits, in 1738, that he had been upon a rock, with 20 and 16 fathoms all round it, which lies eastward from the Second Point, about mid-channel, but rather nearer Banca; likewise of a sand laid down in the Dutch draughts between the Third and Fourth Points, near the Banca shore, which he says lies near the mid-channel.

Within the Second Point, about a quarter of a league to the westward, there is a great tree, encompassed with several others of an equal height, but, as this is taller than the rest, it looks like a tree left to grow in the middle of a clipped hedge: it serves as a mark to know the Second Point by, in coming from the northward, and to avoid the extremity of the bank which lies NbW $\frac{1}{2}$ W. of this tree.

By these remarks it is evident, that it is not only dangerous to range the Coast of Sumatra, between these two points, but also to sail direct from one to the

the other. The properest course, after passing the Second Point, is to stand toward the largest Pulo Nanka, which then bears about NbE. At this bearing its two extremities appear low, and the middle somewhat higher. In this track you have 18 or 20 fathoms, which decrease to 15 fathoms: as you near the islands, keep in this depth.

If you are in want of fresh water or wood, you may be conveniently supplied therewith upon the largest island. As there are, between these islands, some dangers near the water's edge, you must \rightarrow without all, and not enter their channels without having first proved them.

When you are off the northernmost island, steer for the Third Point, and leave the Coast of Banca, along which are several dangers, and in general very foul ground.

From Pulo Nanka, when the weather is clear, you may see, to the NWbW. Monopin Hill, situate on the west end of the Island Banca. Its height shews it a good way off, and makes it a sure mark to enter the Straits, in coming from the northward, or to go out of them, coming from the southward.

The Third Point of the Straits, a little higher than the others, is distinguished by a beach of red sand; from off it, steer WbN. toward the Fourth Point, which lies 20 miles W $\frac{1}{4}$ N. therefrom. You sail a little more northerly than the bearing of these two points, to avoid the edge of the banks off the river Palimbam or Palambang, which begin immediately after the Fourth Point, about which you often find unequal depths, of 12, 8, and 6 fathoms: this is not to be wondered at, as it deepens again by standing to the northward.

To the westward of the Fourth Point is a bank, on which the *Stafford* was a-ground, in company with the *York* and *St. George*; a small snow coming by, ran a-ground also. The bearings on board the *Stafford* (while a-ground) were the Third Point (being the easternmost land in sight) ESE. the Fourth Point SEbE. the westernmost land of Sumatra, in sight, west; the westernmost land of Banca NbW. Monopin Hill north, off the Sumatra shore $3\frac{1}{2}$ miles. Sending the boat to sound, found the bank run quite to the shore, and to the Fourth Point. It is soft mud at the edge of this bank, which is hard sand, and so steep, that in running across it, in 3 or 4 boats lengths, had from 7 to 3 fathoms. The *York*, in the morning, could not come to the \rightarrow she let go over night.

The first river's mouth beyond the Fourth Point, is not that of Palimbam, but you meet with it soon afterward; also a little further, with a second branch, which divides also into two branches, though this last double branch disembogues

disembogues itself by one mouth in the Straits. The Dutch have a factory 14 or 15 leagues up it : their principal trade here consists in pepper, calin, and rattan, or tutenague, and small cane.

Four leagues NEbN. off the Fourth Point, is a dangerous reef, formed by several summits of rocks (encompassed with sand) just above water ; 20 fathoms water about a ship's length therefrom.

SWbS. about 5 or 6 miles from these rocks, is a bank of 10 fathoms : any one, not apprised thereof, by sounding on it, in the night, may think himself on the edge of the bank of Sumatra, and by standing off may run upon these rocks.

The tides run in and out of Palimbam River with great rapidity, especially in the rainy seasons, which cause it to overflow greatly ; then the water appears muddy round about, several drifts float along upon the water, and sometimes even 3 or 4 trees, surrounded with bushes, resembling floating islands, which the violence of the torrent forces into the sea. In sailing from this river, you must guard against the force of the flood, which drives toward the banks, and the ebb, which drives toward the Banca shore : there the soundings are very dangerous ; for, besides the different reefs you meet with, there is a considerable bank of gravel, which projects $1\frac{1}{2}$ league SW. off the western point of this island, near which there is a rock, with only 9 or 10 feet water.

In sailing from the third to the fourth point ; when Monopin Hill bears NNW. you must steer NWbW. to range the banks off the river Palimbam ; but whether by day or night, you must not approach it under 8 fathoms. Continuing this course, you discover, to the NW. the False Point of Batacarang, and soon afterward the True one : these two points, and the low land which lies at the foot of Monopin Hill, 6 leagues to the eastward, terminate the Straits of Banca, on the NW. side.

The principal danger which is found in this channel, is the Rock Frederick-Endrick (or Hendrick), on which a Dutch ship was lost ; it is said that on its shoalest part there are but 12 feet water : the ship Atalanta struck on it in 1729, and was happy enough to get off without hurt. The rock lies WNW. (or, according to some, W $\frac{1}{2}$ N.) of the highest part of Monopin Hill, and about 7 miles from the low land of this part of Banca. You may avoid it by keeping rather nearer the Coast of Sumatra, in 8 or 9 fathoms, (or from the first cast 6 fathoms steer no further westerly than SbW. and so long as you keep under 10 fathoms there is no danger with that course) ; and you have nothing to fear from the banks which encompass the points of Batacarang ; but the increase
of

of that depth, about these points, is a sign of nearness to Fredrick-Endrick. You must be careful of this, otherwise you suddenly fall from 16 to 5 and 3 fathoms. In coming out of the Straits, you discover, to the northward of Monopin, several little islands, some upon the north Coast of Banca, others further off.

CCLXXVIII. DIRECTIONS *for SAILING from the STRAITS of BANCA to PULO-TIMOAN.*

Having doubled Fredrick-Endrick, you steer NbE. to pass between the Seven Islands and Pulo Taya; the former lies about 14 leagues on this point of the compass from Monopin Point in latitude $1^{\circ} 7'S$. They are of various sizes, and high enough to be plainly seen 8 leagues distance; the southernmost appears very small, and a little separate from the rest; the northernmost is the largest. The coasting along these islands is safe on the west side; but on the opposite side, and between them, it is not known what dangers may be met with.

Pulo Taya (25 miles NW. of the northernmost of the Seven Islands) is high, and may be easily seen, in fine weather, 10 or 12 leagues. On the north side thereof are two great rocks. Most latitudes taken on the parallel of this island fix it in $0^{\circ} 48'S$.

In sailing from the Straits of Banca toward these islands, the depth increases from $7\frac{1}{2}$ to 12, 15, and 17 fathoms. In the night-time, or in cloudy weather, you may perceive whether the currents set to the westward by the soundings decreasing, and having sand mixed with mud; whereas on Banca side they increase, and are mud only.

Beyond Pulo Taya there are islands large, middling, and small; and all in general are exceeding high. The most considerable is that of Lingen, which shews itself above the rest by a mountain, whose top terminates in two pointed spires, like two steeples, near each other. On the east part of this island is another mountain joined to the former by low land, which at a distance looks like an island; this last is not so high, nor rugged at the top. To the eastward of this lies a little island of a middling height, covered with trees, about $1\frac{1}{2}$ league distance from Pulo Lingen Point.

Some navigators say, that between Pulo Taya and the south point of Pulo Lingen, lie several islands, which are not marked upon the charts. There is a dangerous bank, on which the ship *Ilchester* was a-ground, 1754; but by backing all her sails instantaneously, she providentially got off again. They
observed

observed at noon, in latitude $0^{\circ} 21'S.$ and steered per log WbS. about 8 leagues, and struck in a quarter less 3 fathoms mud; at the same time they saw two hummocks, bearing NNW. westerly. The cast before they struck was 24 fathoms.

To the northward of the east point of Pulo Lingen, and exactly under the Line, are several little low islands, surrounded with rocks, called the Dominies.

When you are about 5 leagues east of Pulo Taya, steer NEbN. till in latitude $0^{\circ} 30'N.$ in order to go without the two banks hereabout. The easternmost lies NEbN. of the east point of Pulo Lingen. It is prudent to beware of them.

The soundings in this track, between Pulo Taya and the Equinoctial Line, are 18 or 20 fathoms, fine grey sand; and beyond it, 24, 25, and 27 fathoms, the same ground.

Having passed the banks above-mentioned, you must steer NbW. to get sight of Pulo Auore, called also Pulo Aor, or Pulo Auro.

You generally experience, in this track, some helps to the northward and westward, and consequently you make Pulo Auore sooner than you expected. Some navigators attribute these events to the currents, which run into the Straits of Malacca; however generally this opinion may be received, it doth not appear probable. In fact, as almost all ships fix the same difference, it should seem that the currents continually set into these straits; but the experience of both ebb and flood proves the contrary. If you should happen to be set to the eastward, toward the Anambas, you may be apprised thereof by your soundings, which will be 45 and 50 fathoms mud; whereas in the fair way to Pulo Auore, you have from 28 to 35 fathoms, fine grey sand, sometimes a little coarser, mixed with small black stones, and very little mud.

From Pulo Auore you sail toward Pulo Timoan, and from thence take your departure for Pulo Condore.

Some charts lay down the Islands of the Holy Ghost; but few Journals or Memoirs make mention of them. Some of these islands have, of late years, been seen by some of our ships, particularly the Osterly, Capt. Frederick Vincent, in 1758, and the Albion, Capt. William Larkin's, 1762. Woody Island, a small island so named on account of its being covered with trees, lies in latitude $1^{\circ} 40'N.$ and $46'E.$ from Pulo Taya. Saddle Island, making in two hillocks, which bear about E. and W. of one another, was seen by both ships; and lies in about $2^{\circ} 20'N.$ and about $28'E.$ There is a remarkable white rock,

bearing about SbW. 5 leagues from Saddle Island, on the west side whereof the Osterly passed within a mile of it, and had 28 fathoms, fine grey sand. The Albion went between them, rather nearer Saddle Island, and had 38 fathoms. Mr. Powell, chief mate of the Osterly, mentions 5 small islands, or rocks, to the north-eastward of Saddle Island 3 or 4 leagues; but Capt. Vincent takes no notice of them; nor Capt. Larkins, who passed so near Saddle Island that he must have seen them, had they existed. The southernmost of the Anambas were seen at the same time, and Pulo Domar soon after.

CCLXXIX. DIRECTIONS for SAILING from PULO CONDORE toward CHINA, to the Eastward of the PARACELS.

This passage deserves to be preferred by navigators to that between the Coast of Cochinchina and the Paracels; for the squalls and calms which happen frequently in the latter, the number of dangers with which this coast is surrounded, and the little succour which the ports thereof afford, render the voyage longer, more painful and dangerous, and without any one advantage: on the contrary, in the eastern passage, the monsoons are constant and fresh, the passage is shorter, and the dangers (which are not many) may be easily avoided: therefore modern navigators chuse this, and have almost wholly relinquished the other.

After you have sight of Pulo Condore, continue your course to pass to the southward, or rather eastwardly thereof, as ships usually do, although on occasion they may pass safely to the westward; and after you are past it, shape your course for Pulo Sapata, or the Shoe Island, bearing NEbE½E. 25 leagues. (Capt. Vincent thinks it should be rather 55 leagues, being 50 by the charts; Mr. Herbert, that it should have been 52 leagues; Mr. Nichelson makes its bearing and distance ENE½N. 48 leagues.) NNW. 4 leagues from this, is another little round island, called the Great Catwick; and between them both a rock above water, called the Little Catwick, which resembles a little pyramid. There is said to be a small rock even with the water's edge, EbN. 15 leagues from Pulo Condore, discovered by Captain Boone; it is prudent to keep a good look-out.

Two miles to the south-eastward of Pulo Sapata it is said there is a shoal. M. le Chevalier de la Boissiere, commander of the ship Neptune, in 1733, mentions in his journal that he saw it break, about half a league from him, and that it seemed to break for about a cable's length. That the ship Mars, in 1730, being becalmed, about a league to the south-eastward of Pulo Sapata, perceived

perceived the rocks under the ship's bottom, in 20 fathoms. He was then very likely on the extremity of the reef. Such well-grounded authorities for the certainty of this danger, are sufficient to induce navigators to beware of it, and not approach Pulo Sapata nearer than 2 leagues; besides, it is enough to see it, without coming near it.

N. B. West 4 leagues from the Catwicks is a rock lately discovered.

The *Gottenberg*, a Swedish ship, coming from Batavia, and bound for China, in July, 1744, made Pulo Sapata, which at 8 A. M. bore NW $\frac{1}{2}$ W. by compass, distance by estimation 4 or 5 English miles. It being only light airs and calm, hoisted out the pinnace, and rowed toward the middle of the island, and heaving the lead, had 120, 70, 60, 30, 20, 14, 10, 7 and 3 fathoms, grey sand and red coral, with stones; hove the lead again, and had immediately 13 to 14 feet, the middle of the island then bearing very near NWbW. distance 3 or 4 miles; rowed away again to the land, and found from 14 feet to 6 fathoms, and so deepened away to 12 fathoms: then they had a pretty breeze southerly, and the signal was made for the pinnace to come on board; so that they had no time to heave the lead any more, otherwise would have taken the cross bearings of Pulo Sapata, and the two small islands.

This may possibly be the same shoal here mentioned; or, as the soundings are so irregular, it is not improbable but that there may also be another nearer the island. For these, the caution of coming no nearer Pulo Sapata than 2 leagues may be sufficient. The shoal, or shoals, mentioned by Capt. Hill, Misenor and Webb, bearing ESE. from Pulo Sapata: the former sets them at about 7 miles distance; but Capt. Webb thinks they lie better than 3 leagues off, the island bearing WNW. about 2 miles, when they saw the shoal only from the mast-head, according to the following extract from his journal: September 1, 1751, at half an hour past 11 A. M. Pulo Sapata bore N. distance about 1 $\frac{1}{2}$ mile; at noon Pulo Sapata bore WNW. 2 miles; the Small and Great Catwick in one, NWbW. There seems to be a reef running from the Little Catwick to Pulo Sapata, and a great rippling from the said Catwick toward the NEbE. about 6 miles. We also saw the breakers from the mast-head, formerly seen in the *Compton*, Capt. Misenor; they bear about ESE. more than 3 leagues from Pulo Sapata.

As there is no occasion, it doth not seem prudent to go nearer Pulo Sapata

than 4 leagues, not even in clear weather. This shoal is really very dangerous. Let this serve as a general caution to all navigators, how they too confidently assert the non-existence of shoals, because they perhaps have passed near the spot where they are said to lie. None can have more reason for such an assertion than the above three ships; yet the Swede's account is so particular, and in a great measure confirmed by that of the Mars, that its existence cannot reasonably be disputed. This is confirmed by Capt. Haggis, who saw them in the Prince Henry, in 1758, and again next voyage, in 1761, and is confident its distance is not above 5 miles from Pulo Sapata, and is in one with Sapata bearing SEbE½E.

Having passed these islands, about 2, or rather 4 leagues to the eastward, the course is NE½N. to get soundings on the English Bank, or Macclesfield Shoal, situate between the parallel of latitude 15° 40' N. and 16° N. thereby you leave to the starboard the Rock of Andrade, the Vigia of 11°, and a rocky bank, which lies in latitude 12° 24' N. and 42 leagues NE½E. from the latter.

In September, 1750, the York, Capt. Ward, ⚓ed on this bank, the Macclesfield Shoal, in 10 fathoms, rocks and clay; sent his yawl to sound all round about; and found no less than 10 fathoms. When he run off to the northward, had 11, 12, 15, 19, and 25 fathoms, then no ground with 50 fathoms of line, and was at that time in latitude, by account, 16° 3' N. He made 4° ¼ meridian distance between Pulo Sapata and this bank, where he ⚓ed; but he imagines he had a strong easterly current; he afterward made 14' easting to the easternmost of the Lehmo Islands. In the Prince Henry, 1758, about the same latitude, and 4° 16' E. longitude from Sapata, they had 47 fathoms coral rock. Then steered NbW. and soon after had 15, 14, 12½, 11, 13 fathoms, all coral rock, as far as they could heave the lead: then no ground, 17, 30, 45, 50 fathoms, having run in this time about 4 miles.

The Vigia in latitude 11° N. is a sandy island, near the surface of the water, which has a reef at each end. A navigator, returned from Manilla, saw it, as well as the rocky bank above-mentioned, upon which he sounded, and had 9 fathoms. The Montague and Cambridge made it on a NEbE. course from Pulo Sapata, in 11° 5' N. by a good observation.

NE½N. from Pulo Sapata, in latitude 12° 45' N. is a bank of 20 fathoms. Several ships going to China, have actually seen the colour of the water changed hereabout.

hereabout. Though this bank is not dangerous, to avoid it, in sailing from Pulo Sapata, steer NE. till you are in the same latitude, and then NEbN. for the English Bank, or Macclesfield Shoal.

This is that rocky bank under water, discovered in 1701, by the Macclesfield. Its extent from north to south, as above-mentioned, is better known than that from east to west. On it are various depths; those of 50, 40, 35, and 20 fathoms, are the most common; but on the NE. part it is much shoaler; there several ships have found 9 fathoms, and immediately after, sailing to the east or west, the depth exceeded 60 fathoms, by which you may judge the steepness of its verge.

The Spectacles, or St. Anthony's Girdle, are several rocky pyramids, between which it is exceeding dangerous to pass; some rise to the surface of the water, and many others have 60 or 80 fathoms quite close on board of them.

It is very useful to get soundings on the English Bank, or Macclesfield Shoal, to correct the reckoning, that from thence you may, with more certainty, shape your course toward that part of the coast of China as you intend.

The necessity of falling to windward of the consigned port, obliges ships, in this monsoon, to make the land to the westward; therefore those who are bound to Macao, must get sight of the Island Sanciam (or St. John), or Pulo Outchou (or Pulo Baby) whose south point is in latitude $21^{\circ} 30' N$. Therefore, from the English Bank, steer NNW $\frac{1}{2}$ W. by this means you may be sure of seeing them, or even the Mandarin's Cap, which is still more westerly.

If the currents set you to the eastward, within sight of the Ladroon and Lema or Leehmo Islands, you may know them from those on the west side, by means of their latitude; because the south point of the Great Ladroon is $23'$ more northerly than that of the Island Sanciam. A difference of this kind ought not to escape an observer. Besides this, the size of the western islands (each of which, in particular, appears much longer than those to the eastward) and their different bearings, are more certain signs than the quality of the soundings.

As it is very material to be certain whether you are to the eastward or westward of the Grand Ladroon, these other rules and marks for this purpose are to be observed. When you are in latitude $19^{\circ} 30' N$. sound, and if you have above 55 fathoms, haul to the westward (or above 50 fathoms in latitude $20^{\circ} N$.) so as not to have above 30 fathoms in latitude $21^{\circ} N$. keep in that depth, and it will bring you in sight of the Grand Ladroon. If you have more than 30 fathoms in latitude $21^{\circ} N$. you may reckon yourself 3 leagues to the eastward,
for

for every 2 fathoms greater depth. In latitude 21° N. and 30 leagues to the eastward of the Grand Ladroon, are 50 fathoms, coarse sand and black specks.

In sight of land, to the westward of the Grand Ladroon, you generally have muddy ground. The Grand Ladroon is very high, and in fair weather may be seen, from the mast-head, 14 leagues, or in latitude $21^{\circ} 20'$ N. and no other land in sight; if it bears north, you have then about 35 fathoms. If you have no soundings till you get into latitude $20^{\circ} 40'$ N. and then have from 45 to 50 fathoms, fine grey sand and ouze, the Grand Ladroon will certainly bear between the N. and NbW. Others say, South from the Grand Ladroon, in 40 or 45 fathoms, you will have black coarse sand, and sometimes larger stones, and nearer it white coarse sand and shells. But if you have no soundings, till you get to the northward of latitude $20^{\circ} 40'$, you will find more than 50 fathoms, by which you may depend on being to the eastward of the Grand Ladroon.

In relation to soundings, it may be said with certainty, that being to the westward of the Grand Ladroon, in latitude $20^{\circ} 20'$ N. or latitude $20^{\circ} 30'$ N. your first soundings will be from 90 to 70 fathoms, dark sand and ouze; then by standing to the northward you will have 50, 40, 30, and 20 fathoms, sand, coarse sand and shells, sand and stones, and fine grey sand. As soon as you get into 18 fathoms, you will have soft mud, which continues to the Bogue Tigris (the soil, and not the water). The reason for being so particular, is because the rule of soft ground to the westward, and hard ground to the eastward (if followed) may easily lead one astray.

Another guide is the depth of water; the islands to the eastward being much steeper than those to the westward. Again, all the islands to the eastward are high and uneven, having 16 or 17 fathoms water among them; whereas those to the westward are moderately even, very high, large and long, and make more like a coast than islands, and have but 7 or 8 fathoms. To be certain, this is said to be an infallible rule. When in latitude $21^{\circ} 30'$ N. stand about 7 leagues to the northward; at which distance, if you shoal your water but 1 or 2 fathoms, you are then undoubtedly to the eastward; but if 7 or 8 fathoms, you are to the westward.

When or wheresoever you fall in with them, push in boldly for them; and if you do not then know where you are, come to an \rightarrow (for there is always good \rightarrow ing ground) and get a pilot; for if you are fearful, and lie off, the currents will drive you about, and other ill consequences may follow.

When

When therefore you are convinced, by one of the methods above mentioned, that you have fallen to the eastward of the great channel of Macao, coast these islands to the southward, also the Grand Ladroon, which being doubled, you steer NW. to approach the Island Mirou, which has a white patch on the land in shape of a mizen; this makes it easily known.

According to several reports, the different channels which are formed by the Ladroon and Lema Islands, are deeper, and not so full of dangers as the passages between the western islands; yet it is not prudent to venture therein, without a coasting pilot, which you will have come off to you on firing of guns. For want of this, the safest way will be to sail to the southward of them, even though the wind is contrary, since you may fetch the Road of Macao, by favour of the tides which ebb and flow.

Whether you fall to the eastward or westward of these islands, the soundings will always shew their nearness, and you generally meet with them 16 or 18 leagues from land.

If by any unforeseen accident your voyage is prolonged, or by a too late departure you are hindered from making Pulo Condore till the end of the westerly monsoon, the course I have above described will not be safe. This happened, in 1740, to the ship *Jafon*, commanded by M. Dordelin, who having fallen to the leeward of the Straits of Sunda, and being in sight of Trieste Island, 38 leagues to the north-westward of Engano, to avoid losing time to no purpose in beating to the windward, he sailed along the islands off the Coast of Sumatra, and went into the eastern seas, through the Straits of Malacca. Delayed considerably by calms and contrary winds, he did not make Pulo Condore till the 12th of September, when, to render his passage the more certain, he resolved to follow the course above described. The 3d of October he got sight of the Island Luconia, and arrived on the Coast of China, about Groaning Bay, the 9th of the same month; and from thence to Lintin, or Linting, by sailing between the Islands of Lema. Thus this voyage was rendered successful by the prudence and ability of the navigator.

The changeable winds and frequent calms, which usually precede the changes of the seasons, make it necessary to take the following precautions. From within sight of Pulo Condore, endeavour to make Pulo Sapata, as aforesaid, then steer NE. as far as latitude 13° N. to avoid the rocks spoken of in the same article. From this situation steer NEbE. to get sight of the north part of the Island Luconia.

Upon

Upon approaching this island you should keep a good look-out for the dangerous banks of rocks, which lie along the west coast, lest by an error in your account of longitude you fall in with them, when you reckon yourself at a distance from them. You may perceive the breakers in the day-time; but in cloudy weather, or in the night, you run in danger of being lost: you may prevent this accident, by getting to the northward in time, at least into latitude 17° N. in order to get beyond their latitude, and then sail toward the coast as far as within sight of Cape Bajadore.

You must not expect to find soundings here, as in most other places, whereby to know the nearness of the coast: its steepness prevents your getting soundings, even at a small distance from the shore; but the land is high, and may easily be seen 12 leagues at sea.

From within sight of Cape Bajadore you shape your course toward the coast of China; and herein you must be very careful to avoid the dangerous bank of Plata, or the Praters on which many ships have been lost.

This bank is situate 78 leagues ENE. of Cape Bajadore, extending 8 leagues from north to south, between latitude $20^{\circ} 45'$ N. and latitude $20^{\circ} 17'$ N. and 10 or 11 leagues from east to west. This space is filled with rocks above and under water. On the NW. side lies a little island, in form of a crescent, near which you may \rightarrow in 8 fathoms, white sand mixed with rocks. To the north-eastward is a bank of sand near the water's edge; and in different places are to be seen \rightarrow s, left by ships that have been there.

Captain Dennis saw the Praters from NW. to ENE. and a small island within the breakers NNW. 3 leagues he sounded, but no ground with 70 fathoms. They made the latitude of the Praters $20^{\circ} 5'$ N. and meridian distance $5^{\circ} 55'$ E. from Pulo Sapata. He afterward made $1^{\circ} 46'$ W. to the Lema Islands, which he made in latitude $21^{\circ} 58'$ N. and meridian distance $4^{\circ} 9'$ E. from Pulo Sapata.

The bank of Plata is so much the more dangerous, as you do not perceive the island in coming from the southward, nor from the eastward; you only distinguish the rocks 2 or 3 leagues off, so that to avoid them, you must in sailing from Cape Bajadore) steer NWbN. till in latitude $21^{\circ} 30'$ N. then steer WNW. to make the Coast of China, which you may range till within sight of the White Rock, situate in latitude $22^{\circ} 6'$ N. and 5 leagues from the Continent.

This rock is easily known by its whiteness; it is safe, and steep to on all sides. You may pass between that and the Coast of China; the least depth is
15 fathoms.

15 fathoms. From thence, steering WbS. you presently see (on the same point) the Islands of Lema, between which there is a very fine channel to go to Macao; those who have sailed through it say that the dangers are visible, and that you do not find less than 8 fathoms, mud. To the northward there is a hill called the Peak of Lantao. Those who do not chuse this, may coast the islands on the south side, as far as the Great Ladroon, and conform to the instructions to reach Macao.

CCLXXX. *Captain D'Auvergne's Account of the Ship SCARBOROUGH striking on the SOUTH MAROONA, off the Coast of LUCONIA, SEPTEMBER 12, 1748.*

Moderate gales and smooth water, the winds from N. to NNW. At sunset I sent an officer to the mast-head to look out, the ship being near the latitude of a shoal which in some charts is laid down in $15^{\circ} 10' N.$ and in others $10'$ more northerly: the officer saw nothing.

As none of the company's ships have been on the Coast of Luconia, except lately the Defence, Capt. Coates, and the Tigris, Capt. Petre; and as the draughts of the China Seas are very erroneous (varying greatly in their meridian distance between Pulo Sapata and the Coast of Luconia, and consequently in that of the Maroons) by comparing these with the meridian distance Capt. Petre made to the said coast (viz. $10^{\circ} 15' E.$) I judged the Scarborough at noon was at least 30 leagues to the westward of the southernmost of the said shoals.

At 8 P. M. I sent a man to the bowsprit end, and another to the foreyard, to look out; notwithstanding which the ship unfortunately struck at half an hour past 9. I directly caused all the sails to be laid aback; and though the ship went on easily, she would not back off. The wind, when the ship struck, was at NNW. By sounding round the ship, I found she hung only forward, having 38 fathoms a-stern, and 17 fathoms a-mid-ship. I therefore ordered all the guns to be brought aft, and 40 odd butts of water started in the fore-hold, and all that could be moved aft, to be brought thither: all this proved insufficient. I then ordered all the boats out to sound; and the stream- \rightarrow was soon after carried to the westward, in the only place where an \rightarrow could be laid: it was hove on, but to no purpose; for the \rightarrow was on the beam, and the ship's fore foot (I suppose) lay between two rocks.

A squall from the westward cast the ship's starboard bilge on the rocks, till which time she did not beat, but lay without any motion, as the sea (when

A a a

she

she struck) was very smooth; but the squall being right on the shoal, made a little swell; however, it did not last long. Finding the ship thumped somewhat hard on the starboard bilge, it was judged necessary to lighten her; on which I ordered all her guns to be thrown over-board.

While the ship was on the shoal, the water was perceived to fall from the rocks, and before she got off, to rise again; which makes me believe the ship struck either at high water or about half ebb. It was new-moon this day.

The ship still remaining fast, the kedge- \rightarrow was therefore carried out a-stern, though I expected but little good from it, there being such deep water, that the cable was almost right up and down; however, when the ship was hove thereon, she began to come off; but this I attribute more to the rising of the water than the heaving; for the ship's fore foot being between two rocks, the stream- \rightarrow was of no service, and the kedge- \rightarrow was a-weight before the ship was quite off.

At half an hour past 6 A. M. the ship's head payed round off; so that rather than run the risque of bringing her up, and casting the wrong way, if I stayed to have the stream- \rightarrow hove up, I ordered the cable to be cut at the bits; and, under the blessing of God, the ship got off and made no water.

I made $6^{\circ} 35' E.$ meridian distance from Pulo Sapata, when the ship struck in latitude $15^{\circ} 6' N.$ (Some other remarks make this shoal in $15^{\circ} 10' N.$ and $9^{\circ} 10' E.$ from Pulo Sapata. Capt. Webb, in September 1751, made but $6^{\circ} 52' E.$ meridian distance from Pulo Sapata to the sight of Luconia, about 15 leagues distance, in latitude about $17^{\circ} N.$ They experienced a current to the northward, which doubtless set strong to the eastward withall. They were 16 days on their passage from one to the other.)

At day-light the rocks appeared frightful, though it pleased God the ship was on the sea side of the shoal, which is at least 2 leagues over, and 8 long. On the east side of the shoal, the rocks are almost as high as those of Scilly, and a terrible sea breaks over them. On the west side they are no bigger than a boat. They seemed to lie about NNW. and SSE. I think the Scarborough was near the north end of them, seeing the water blew to the northward of them, and rocks were seen SEbS. 3 leagues from the ship.

That my misfortune may be a warning to others, who have the honour to navigate the Honourable Company's ships in these seas, and intend to go on the Coast of Luconia, at the latter end of the SW. monsoon, in order to save their passage to Canton, which is the surest way; I advise them not to come to the northward of latitude $14^{\circ} 14' N.$ before they are sure of being within this shoal;

shoal; but, if they do not intend to go on the Coast of Luconia, then I advise them not to make more than $5^{\circ} 30' E.$ meridian distance from Pulo Sapata.

This shoal goes under different names, being called by the Portuguese Cabeça or Calebassos dos Negros, by the Spaniards Marfingola, and by the Dutch Zee-flang, or the Sea-serpent, it having that shape in their charts; but I believe it is best known to the English by the name of the South Maroona; I have therefore called it so. On this shoal are 3 small rocks above water, resembling, at a small distance, Negroes heads. The Scarborough went close to one of them, and near the three.

The North Maroona, or Double-headed Shot, called by the Spaniards Baxa Boliana, by most accounts lies nearly north from the other, or however not above 5 leagues more westerly. These shoals are reckoned to lie about 25 leagues from the Coast of Luconia.

In the latitude of $14^{\circ} 15' N.$ and about 12 leagues SSE. from the South Maroona, lies another shoal, universally called Baxos Mirabilis. These three shoals make all the channels to the Coast of Luconia very narrow, and, as they are out of sight of the coast, very dangerous.

CCLXXXI. DIRECTIONS *for SAILING through the STRAITS of SUNDA, to BANTAM or BATAVIA, in the WESTERN MONSOON.*

Whether you come from the Indies, or any other part to the westward, endeavour to make Engano, or the Deceitful Island; then with the westerly winds sail toward the south point of Sumatra, from whence this island is 35 leagues distant. This extremity terminates in a low point, covered with trees, very near which lies the little Island Fortune, low and woody, like the former. Captain Hall, of the Worcester, makes this island in latitude $50^{\circ} 58' S.$ On Sumatra you may see several high mountains.

Afterward you steer so as to go to the southward of Cracata Island, and from thence you pass between Middle Island and the Little Cap, conforming to what is already said, in the beginning of the preceding directions.

If there is any danger in the passage between Pulo Cracata and Sebeffi, (or Tamarin Isle) it is apparent. The winds and currents being favourable in this monsoon, it will be convenient to pass them, as well as between Middle Island and those to the south-eastward of Hog Point, especially as this course is straiter than that just mentioned.

When you are $1\frac{1}{2}$ league to the northward of St. Nicholas Point, if you would go to Bantam, you must approach Pulo Panjang, a long and flat island, which you may pass on either side; only observe its south point is dangerous. The west channel has 6 or 7 fathoms water, and the east channel, which is wider, 8 or 9. Having passed this island, you see, upon Java, a round hill, which, when it bears SSW. the town of Bantam is in one with it. You must keep on till opposite Golgotha Island, off which is the road: there you \rightarrow ; 5 or 6 fathoms, mud.

If you go to Batavia, when you are a league to the northward of St. Nicholas Point, you must steer EbS. to go between the coast of Java and the Islands of Baby and Tidang, (or Wapen Isle) lying on the north side, and continue this course till within sight of the Great Cambuis (or Cambuyre) bearing thus 15 or 16 leagues from St. Nicholas Point. You may come within a mile of the north side of it, and still nearer to the Little Cambuis (three quarters of a league EbS. of the Great one) whereby you will avoid several shoals which lie to the northward. For the particulars see the charts, as some of them have beacons on them, and the others break, by which they may be seen before you come to them. That on which the Lyell was a-ground in 1734, bears WbN $\frac{1}{2}$ N. 7 miles from the west end of Great Cambuis, and NNW. 4 miles from Maneater's Island.

Two leagues SEbE. of the Little Cambuis is the Island Midleburg, near which is that of Amsterdam, which you also pass to the northward. The depth in this track is 13 or 14 fathoms. Having passed these two, to enter the Road of Batavia, through the great passage, stand to the eastward, to come within three quarters of a league to the Island Edam, from whence you stand to the southward, leaving Horn Island to the starboard, and that of Enchusen to the larboard. This track will lead you opposite Batavia, where you may \rightarrow in what depth you think proper. The road is always full of ships, of all the Indian nations, who come hither to trade. This town is the chief of the Dutch settlements in the Indies; and here the general and head consul reside. It lies in latitude $6^{\circ} 12'S.$ and $107^{\circ} 0'E.$ longitude from London.

CCLXXXII. DIRECTIONS *for SAILING from BATAVIA to the STRAITS of BANCA.*

Going from Batavia to the Straits of Banca, you must steer NNW. for the South Watcher, 10 or 11 leagues from Batavia Road. You may pass it either to the east or west, three quarters of a league. If you go to the eastward; you must approach it before it bears NW. in order to avoid a little bank, called (by the Dutch) Nafomver's Drooght, about 2 leagues to the south-eastward.

When the South Watcher bears SE. if you do not chuse to sail along the Thousand Islands, you may stand to the northward, and NbE. to go wide of them, and pass between the bank or sandy island, called Brouwer's Drooght, and that of Prince's Drooght: the first lies about 7 leagues NE. of the South Watcher, in latitude $5^{\circ} 24' N$. the other 8 leagues NWbW $\frac{1}{2}$ W. of Brouwer's Drooght, in latitude $5^{\circ} 12' N$. Being in latitude $5^{\circ} N$. steer a NNW. course, as far as latitude $4^{\circ} N$. to get into 12 fathoms, eastward of the bank off Great Tree Island; and care must be taken to sound from time to time, to prevent falling to the westward of your reckoning. On the contrary, if the soundings shew by a great depth that you are to the eastward, you must then steer more westerly than the course prescribed, in order to gain 12 fathoms. After this, follow the Directions for passing the Straits of Banca.

CCLXXXIII. DIRECTIONS *for SAILING from PULO SAPATA toward CANTON in CHINA, in the SOUTH-WEST MONSOON, and back again in the NORTH-EAST MONSOON.*

From Pulo Sapata steer NE. for 24 hours; then NEbN. and NNE. so as to make about 3° or 4° easting, by the time you are in latitude $16^{\circ} N$. or $17^{\circ} N$. then steering about N. will lead you fair with the Grand Ladroon. Ships generally make $3^{\circ} 50'$ or 4° easting from Pulo Sapata to the Grand Ladroon.

The Grand Ladroon is a very remarkable island in latitude $21^{\circ} 55' N$. the upper part greatly resembling the dome of St. Paul's at most bearings; but, when it bears N. NbW. or NbE. the smaller ones, that seem to join it on each side, are like two wings, but of the same figure.

As you approach the Grand Ladroon, you will have deeper water 6 leagues to the eastward, then 12 leagues to the westward. The soundings to the eastward are mud; to the westward, sand; and in the stream of it, sand now and

and then mixed with mud. In latitude $21^{\circ} 10' N.$ and longitude, made from Pulo Sapata, $3^{\circ} 57' E.$ you have soundings 40 fathoms, soft ouze, and may see the Grand Ladroon. In 27 fathoms, soft ouze, you will see the Affes Ears bearing $N\frac{1}{2}E.$ and the Grand Ladroon, $NNW.$ 8 or 9 leagues. The Grand Ladroon bearing $E.$ distance 2 or 3 miles, you will have 19 fathoms. Here you get a pilot.

The island called the Affes Ears lies to the eastward of the Grand Ladroon, and is not very dissimilar; therefore, any land with such an appearance may be depended on, as there is nothing like it to the westward.

On the approach of a gale of wind, if I could not gain Cabretta Bay before night, and was the length of the Viados, or any islands west of Colong, I would \rightarrow within them; and if not, I would run for them; for there is no danger but what is visible. It can be attended with but little (if any) loss of time; and may be the safety of the masts, passage, and perhaps the ship: the want of knowing this circumstance has proved of very dangerous consequence to many.

There is but little variation all over the China Seas: in no place more than a degree, and in most, only from 45 to $55' W.$ Nor are there any considerable currents in these seas; perhaps they may give 6, 8, 10, or 12 miles to the northward or southward of the reckoning in 24 hours; but this difference you will find in any other seas.

From the Grand Ladroon steer such a course, as to give a good birth to the Pratas and Paracels. The Macclesfield Shoal lies between latitude $15^{\circ} 14' N.$ and latitude $15^{\circ} 35' N.$ meridian distance from the Grand Ladroon, $35'$ or $40' W.$ There are soundings upon it from 5 to 10 fathoms, which is the least water on it; the southernmost part of this shoal is steep to. Steer to the southward, and endeavour to make Pulo Sapata, whose latitude is $9^{\circ} 58' N.$ and longitude, from the Grand Ladroon, about $4^{\circ} W.$ If the weather is clear, you may see it at 9 or 10 leagues distance; and, if it should be hazy, so that you cannot see it, proceed according to the instructions above given.

CCLXXXIV. PROGNOSTICK of a TUFFOON on the COAST of CHINA. By
ANTONIO PASCAL DE ROSA a Portuguese Pilot of MACAO.

In the China Seas, on the 18th or 19th day of the moon's age, if the sun sets angry, making the horizon in that quarter of a deep red, and tinging the clouds with the same colour, a storm certainly follows; increasing speedily
 from

from a small air at NE. (from which quarter it is generally found to blow the hardest) to a prodigious hard gale, about midnight veering to the east and south round to the westward: when the wind veers to the SW. the violence is abated: but, when these appearances are attended with thunder and lightning, nothing is to be feared but sudden squalls of short continuance.

I have been an eye witness of ships oversetting in these seas, by officers despising the prognostic, and neglecting to take in the sails in time. I would therefore advise keeping only the fore-sail abroad, in order to run before it: for the sea rises very confusedly, so that lying to is often fatal.

I do not affirm that the 18th and 19th day of the moon's age are the only periods when a Tuffoon is to be feared. Thunder and lightning are the reverse, on this coast, of what they are on others.

CCLXXXV. DIRECTIONS for SAILING to MALACCA, from the Westward, in the WESTERLY MONSOONS.

If you are bound to Malac or Malacca, in this monsoon (when the winds throughout the Gulf of Bengal blow from the southward, and the currents set to the northward), the best course you can take, whether from the Coast of Coromandel, or from Point Gaula in the Island Zeloan, is to make the Acheen Islands; keeping as much as possible in latitude $5^{\circ} 30'N.$ or $5^{\circ} 40'N.$ or $5^{\circ}N.$ if you intend to put in at Acheen. Otherwise you must pass by the little islands or rocks to the northward of Pulo Brassa, and continue your course through an exceeding fine channel, between the north point of Pulo Way, and the rocks $\frac{1}{4}$ of a league to the southward of Pulo Roundo. Capt. Griffin, in the Lapwing, observed, off King's Point, which is the north-westernmost part of Sumatra, and makes it to lie in latitude $5^{\circ} 30'N.$

Having doubled Pulo Way, you proceed toward that part of the coast of Sumatra, between the NE. point of Acheen and Tanjong Goere (or Diamond Point), lying about EbS. or ESE. 40 leagues.

During this season it is rare to find settled weather, so as to make a direct course. The wind hereabout is very variable, and frequently blows from SSE. to ESE. in violent squalls, which, by withstanding their fury, would drive you ashore, especially in a large ship. Navigators should be greatly on their guard throughout this whole strait, and \leftrightarrow in time, to avoid being driven off the coast, so as to be unable to recover it easily. Sometimes also it is necessary, to avoid any particular danger, to keep off the coast when the wind blows thereon

thereon. This premised, once for all, relates in general the rest of the strait.

This part of Sumatra, between the easternmost point of Acheen Road and Diamond Point, is very high land up in the country; but there is some low land by the sea-side. When you are about half way, you must not (if possible) keep above 4 or 5 leagues off shore, and in soundings of 25 and 30 fathoms, so as to be able to \rightarrow in case of a calm, or contrary tide; for you often meet with currents setting to the northward with great rapidity. Some who have been on this coast remark, that there are no soundings above a mile off this coast, with 100 fathoms, especially 'till you come near the Elephant Mountain: others say 2 or 3 miles. It must be confessed, the distance of such high land is very deceiving. It has been proved, by experience, that ships make a much quicker passage, by falling in with Pulo Perah, and standing over to the Malaye shore; this is now generally, if not wholly, practised.

Before you come to Diamond Point, there is a large mountain called the Elephant, which is about 9 leagues from the point: some say 14 leagues; and that between the Elephant and Diamond Point there are about 30 fathoms, at 4 or 5 leagues distance; but farther off it deepens again to 50 fathoms, and then presently off the bank. The latitude of Diamond Point is $4^{\circ} 54'N$.

Diamond Point is low, and encompassed with dangers; to avoid which, you must come no nearer it than $3\frac{1}{2}$ or 4 leagues. From hence the coast of Sumatra extends SEbS. and is only to be discovered by the trees which are upon it. The soundings 2 or 3 leagues off at sea, are very unequal; this may intimidate those who look for regular depths, proportioned to the distance they are off shore. At 5 leagues distance you have 35 and 30 fathoms, and in some parts 25 and 20 fathoms.

Having doubled Diamond Point, you sail along the Coast of Sumatra, toward the Island Varella, which is separated therefrom about 8 leagues, and bears from Diamond Point about $S48^{\circ}E$. distance 30 leagues. Its latitude by several observations, has been determined. Capt. Gilbert Slater, of the Triton, by an accurate observation with Hadley's quadrant, makes its latitude $3^{\circ} 55'N$.

The tides between these two places flow nearly EbN. and WbS. that is to say, $\frac{1}{4}$ after 5 o'clock. The flood is here more rapid than the ebb, and runs SEbE. Capt. Mackmouth says, in his remarks on 6 voyages through these straits, three on the Sumatra coast, and three on the Malaye, that from the NE. point of Sumatra to Diamond Point there is generally a NW. current, especially

cially when the wind blows fresh at W; but at Diamond Point begin the tides, where it flows full and change NEbN. or $\frac{1}{2}$ after 2 o'clock; but the ebb tide sets out much longer and stronger to the NW. than the flood to the SE. This appears more consistent with the account above of the contrary tides, and often meeting with currents setting to the northward with great rapidity.

Pulo Varella may be about 2 leagues in circumference; it is high, woody, very clear, and bold, excepting some sandy bays, the largest of which lies to the SE. You may \rightarrow before this island in 12 fathoms, where you may also take in fresh water. On the south side of this island is a small bay, where you may \rightarrow in 18 or 20 fathoms, about a mile off shore, and fill water, which runs down a hill into a small well, but very slow. Some ships have taken turtle at this island in the night-time, and the fishermen frequent it to dry their nets. There is a little rock or island off the NW. point, and another to the southward.

To make advantage of the wind, you generally pass between Pulo Varella and the coast of Sumatra. There is no danger in sailing between them, the bank marked in the charts having 8 or 9 fathoms water on it, besides which there are others within 3 leagues of the shore, so that it is necessary to keep sounding. There is also a bank, from which Pulo Varella bears from EbS. to ESE. 9 or 10 leagues, whereon there are 9 or 10 fathoms about 4 leagues from the Sumatra shore. Also another of 7 fathoms, grey sand, the island bearing SSE. about 3 leagues; toward the island it deepens gradually from 10 to 15 fathoms. Likewise another to the NE. 8 miles off the island, at the NW. end of Pulo Verura, with only 2 fathoms on it: when Pulo Verura bears SbE. 3 leagues you may see the breakers on it, and are then a-breast of it.

Eighteen leagues E $\frac{1}{2}$ N. from Pulo Varella you meet with Pulo Jarra, a small high island, and steep to, which is generally made in turning it up this strait. Capt. Slater observed its latitude, with Hadley's quadrant $3^{\circ} 56' N.$

When you have passed Pulo Varella, steer toward the Two Brothers, which are two little islands, bearing NE. and SW. about 2 leagues one from the other. The northernmost lies SEbS. 9 leagues from Pulo Varella. You pass to the eastward of these islands, near which you have 29 or 30 fathoms. There is no need to pass between them and Sumatra: besides, it is reported there is shoal water.

From the Two Brothers, shape your course toward the Islands Aru, (Aor, Arou, or Arroë) EbS. about 24 leagues, in irregular soundings, as from 35 to 50, 40, and in some places 60 fathoms. These are several islands, encompassed with rocks above and under water, especially on the west side. They are in two clusters, and distinguished by the Great and Little Arroës. The Little Arroës, or the westernmost cluster, which are more particularly called by some Pulo Jumar, are seldom seen in keeping the new track, along the Malaye shore. Of the Great Arroës, the easternmost or round Arroë is the leading mark for the Channel, between the north and south sands. There are two remarkable rocks, with breakers round them; one NE. about 4 miles from the Great Arroë, which is not to be seen far at high water; the other NE. from the Long Arroë. They may be seen 8 or 9 leagues; the largest of them is about $2\frac{1}{2}$ leagues in circumference. Capt. Ch. Haggis in the Prince Henry, by a very good observation, makes its latitude $2^{\circ} 58' N$. Come no nearer than $1\frac{1}{2}$ league, lest the ebb tide horse you among them, and into dangers. There is water enough round about; but the depth is very irregular, as is also the quality of the soundings.

The Islands of Aru are situate in latitude $2^{\circ} 49' N$. according to several observations which have been made near them.

As you are generally obliged to turn it hereabout, you must make the best advantage you can of the tides, and be very cautious, in standing toward the Malaye shore, to beware of the bank which lies off it; the shoalest part of which is covered with rocks, whereon the sea breaks; and other parts of it have but 2 or 3 fathoms water. It may be considered as the most dangerous in these straits, and should not be approached nearer than 14 or 15 fathoms. Soundings of ouze are not always a certain proof of distance from its verge, because there are (even upon this bank) soundings of this sort, clear and greenish, which would deceive any one who trusts to them. The south point of this bank forms the north side of the channel, through which you cross from the Islands of Aru to Pulo Parcelar, for which reason some call it the North Sand. At low water, there are not above 9 feet water.

To the southward of this bank, on the other side of this same channel, is another, to which some charts ascribe 10 or 12 fathoms water. This bank must be approached with care; for the ship Montfort, in passing between these sands, sent her pinnace a-head to sound, which some time after made signal for shoaling, from 22 to 6 fathoms, on which the ship \rightarrow ed, in 16 fathoms, (and sent to the SE. to sound upon the bank, and found 3 fathoms) Parcelar

Hill

Hill E $\frac{1}{2}$ N. the low land just in sight from the poop; and though perhaps there may be some error in the bearings of Parcelar, yet this makes it evident, it is dangerous being too free with the South Sand-head. Several others have shoaled to 6 or 7 fathoms, particularly Capt. Timothy Tully, in the ship Royal George, in 1732; in his passage fell from 23 to 16, 12, 9, 10, 7, 6 $\frac{1}{2}$, and then \rightarrow ed; at day-light found he had very good bearings, viz. Parcelar E $\frac{1}{2}$ N. 12 leagues; and the Little (or Round) Arroë W. 7 leagues; so that his anxiety was over, but he thought it rare to find so little water with these bearings and distance: he immediately weighed, and steered ENE. and had a few casts at 6 $\frac{1}{2}$, 7, 8, 10, 17 to 21 fathoms, and then \rightarrow ed again, it being calm.

This gives reason to believe that the approaches toward it are not dangerous; and navigators, who have worked through this passage, and passed over it, have assured this, and that it must be distinguished from the channel, because the bottom of it is very hard sand, and not proper for \rightarrow age. Several experienced pilots of this channel are not of this opinion: they affirm, that there are very dangerous inequalities; and you must beware. The surest way is to follow the opinion of these last, as well for this bank, as the others to the south-eastward of it; for it seems as if the passage between their extremities is not thoroughly known.

From the Islands of Aru, to the low land westward of Mount Parcelar, is reckoned 17 leagues E $\frac{1}{2}$ S. This last is a remarkable hill by itself, with low land all covered with trees round about it; it serves as a mark to pass between the banks above-mentioned. Here follows the course you must steer.

In coming from the northward, or from the NW. after passing the Islands of Aru, when the largest bears SW. 3 or 4 leagues, you must steer EbS. Capt. Thorp says, if you have Parcelar hill E $\frac{1}{2}$ S. and the low land in sight off deck, you will be near a bank of foul ground, about a quarter of a mile long. I \rightarrow ed on it in 8 fathoms, bearings as above: I sounded, and found coral rocks 2 $\frac{1}{2}$ fathoms, but all round it 7 and 9 fathoms. Take special care of the tides, which are here very rapid. It flows hereabout 10 hours on the full and change; the flood to the ESE. 7 $\frac{1}{2}$ hours, and the ebb to the WNW. This rule, though variable, may be looked on as almost general. In this track you have unequal depths, as 40, 35, and 25 fathoms, mud.

When the Island Aru bears WbN. about 6 leagues, you may see Mount Parcelar E $\frac{1}{2}$ S. It is best to keep it in this direction, without bringing it to bear more southerly, and steer accordingly. Then you have uneven soundings

in 20, 18, and 15 fathoms, and keep at a proper distance from the south point of the north bank, which is most to be feared. If by any accident you get into 10 fathoms, and Mount Parcelar bears to the southward of E. S. as may happen by the shifting of the tide, then stand to the southward to regain the channel.

You must also take care of the southern bank; it is not proper to approach it in a direction wherein Mount Parcelar bears to the northward of east. Capt. Tully says you may go clear of these sands by keeping Parcelar between E. N. and E. S. and these are the utmost bounds of dangers he ever met with. If the depth decreases, or the quality of the soundings presage some danger on that side, you must keep off its verge, by edging to the northward.

It is imprudent to sail between these banks, without seeing Mount Parcelar, which, for this purpose, is a sure mark to prevent danger. Experienced navigators will take suitable measures, when the darkness of night or hazy weather obscure the sight of it.

Having doubled the banks, you must continue to steer E. S. till within a league and an half of the low land; then sail along shore as far as Cape Rachada.

It is 12 leagues SE. from the low point WSW. of Mount Parcelar, to Cape Rachada. The coast between them is low and woody, forming a bay, which you should not enter. Cape Rachada is an high steep hill, sloping to a point toward the sea, which makes like an island, when you first see it, coming from the north-westward; being situate on low land, which for some time is not seen. About 4 leagues off this coast is the verge of the bank above-mentioned, which lies SE. and NW. and bounds the passage on that side; the soundings along which are very unequal. You have generally between 18 and 25 fathoms along shore, and 30 and 35 fathoms on the bank side, which is counted very dangerous on account of its steepness. The tides in this part run SE. and NW. very rapidly, especially in the springs.

Four leagues north-westward of Cape Rachada, and SEbS. of Mount Parcelar, about a league off shore, there is a shoal, upon which a Dutch ship was lost in 1701; as soon as you are past it you may see a little island, with breakers round it, bearing ESE. Adjoining to Cape Rachada is another reef of rocks, extending 3 quarters of a league to the north-westward. From Point Parcelar to this cape you must keep, at least, 1 league off shore; and even, for safety, farther off, to round the bank above-mentioned; and having doubled it, you steer a course to go about 3 quarters of a league without the cape, off which
the

the depth is irregular, from 15 to 30 fathoms. Parcelar Hill NNW. or Cape Rachada ESE; S. will carry you 2 or 3 miles without it, in 16, 17, and 20 fathoms.

If contrary winds oblige you to turn it, you must be cautious of standing too near the coast on the one hand, and the bank lying off it, on the other, according to the instructions above given.

As soon as you are off Cape Rachada you may see the Coast of Sumatra bearing SSW. It appears low and woody.

Malacca is 9 or 10 leagues ESE. from Cape Rachada: the coast between them forms several bays, and there are to be seen several rivers mouths. You must not go too near shore, on account of the rocks which lie along this coast. When you have doubled Cape Rachada, steer SEbE. and you will soon see the Fort of Malacca.

On this side of Malacca there is a little island, covered with trees, called Fisher's or Lead Island. You pass it about 2 miles, to \rightarrow in the road of Malacca, in what depth you think proper; the church, or the hill, NEbE. You have 7 fathoms a league from the town. The tides flow in this road at half past 10 o'clock, full and change; the flood to the ESE. and the ebb WNW. pretty strong, especially in the springs.

Before you come to Malacca, you see, at some distance from the shore, several small islands, called Water Islands, the southernmost of which bears SEbS. 4 leagues from the road.

Malacca lies in latitude $2^{\circ} 12' N.$ and longitude $102^{\circ} 9' E.$ of London. It has been famous ever since the discovery of the Indies. The Portuguese made a conquest of it in 1511, and kept it till 1641: then the Dutch took it from them, after 6 months siege. They possess it still, and have made it their chief settlement on the Peninsula of Malaya.

Malacca gives name to the strait between the Coast of Malaya and the NE. side of the Island Sumatra. It is through this strait ships pass from the Indian Sea to the Gulf of Siam, China, the Philippine and Molucca Islands; so that this town, in the middle of this strait, is one of the most trading towns in the Indies.

When you go ashore, with your boats, keep the fort well open to the starboard, till you have the river open between the fort and the houses; then steer directly in for the river, that being the deepest channel. The landing place is on the larboard shore, as soon as you enter the river, about two stones throw short of the bridge.

On

On landing, it is customary to wait on the Shabander, whose house is just by; and he sends to the governor, to know if he is at leisure to receive you; when you wait on him, some present is expected by them both. Here is nothing to be had for the people, but old buffalo. The English pay 26 per cent. duty on all trade. Be guarded against impositions.

CCLXXXVI. DIRECTIONS for VOYAGES to MALACCA in the EASTERLY MONSOONS.

The passage from the Coast of Coromandel to Malacca, at this season, is liable to great difficulties, especially from Madras, Pondicherry, and other places more to the southward; because the winds (throughout the Bay of Bengal) then blowing from NNE to ENE. and the currents running to the southward, afford no hope of success. For those who sail from Masulipatam, or any other part of this coast more to the northward, and from Bengal, these directions are particularly adapted. They may likewise be useful to those who are bound to Malacca, from Point Gaula, Pondicherry, or Madras, about the end of the western monsoon, when the calms and shuffling winds will retard their arriving on the east coast of the bay, before the setting-in of the easterly monsoon; at which time, if they conform to these instructions, they will shorten their passages and render it more safe.

In sailing from Bengal to Malacca, in the easterly monsoon, the track from the shoals off the mouth of the Ganges, is to make the western Coast of the Great Negraile; and if, by an unforeseen error in your reckoning, you should make the land to the northward, have a care of the little island called the Buffalo, which lies off the Coast of Ava, in latitude $17^{\circ} 6' N$.

When you are within sight of Negraile Island, or Cape Negrais, it will be necessary to keep close along the west coast, to luff up to the south point; and then to bear away, so as to pass a league and an half to the southward of Diamond Island; and thereby you avoid the Negada or Sunken Island, and the rock between them. For greater surety it will be proper to bring Diamond Island to bear NWbN. 4 or 5 leagues before you stand to the southward.

To make the most advantage of the wind, and avoid the consequence of the currents, which set to the westward: on leaving Diamond Island, endeavour to make the Islands Cabossa, Tenasserim, or those of Tores, which are the westernmost of the Archipelago of Mergui. These islands are very high, and may be seen far off at sea; by the soundings about them, you may form a judgment of their distance.

From

From these islands, steer SbE. to go clear of those along the south part of the Coast of Tenasserim; they are clear and without danger, or at least any that is visible.

Some charts lay down two islands in latitude $9^{\circ} 45'$ and $50'N$. about 30 leagues to the westward of those of St. Matthew; different journals and memoirs make no mention of them. The uncertainty of their true situation deserves the attention of those whom it may concern,

In latitude $8^{\circ} 30'N$. and 13 or 14 leagues east of Junk-Seilon Island, lie the Islands of Seyer, which may be seen 6 or 7 leagues off. Leave them on the larboard, and from thence steer SE. to make Pulo Bouton, which lies 27 or 28 leagues SSE. from the south point of Junk-Seilon, in latitude $6^{\circ} 35'N$. Pulo Bouton is not the only island to be seen; all the Coast of Queda is encompassed with several others of different sizes, and very high; that of Ladda is the most considerable; to the eastward of it lies the port of Queda, very much frequented by the Malayes, and other Indian nations, whom trade brings hither.

From Pulo Bouton to Pulo Pera the course is SbW. 18 leagues; this last is a little round island, steep to, covered with trees, and about $1\frac{1}{2}$ league in circumference. It is clear all round, and may be approached with safety. Its situation is almost in the middle of the entrance of the Straits of Malacca; being by itself, and out of sight of the coast and the adjacent islands, make it easily known; and it is a mark to the ships that come, or go out of this strait.

Round about Pulo Pera you have 60, 50, and 40 fathoms. In crossing from this island toward Diamond Point, or Tanjong Goere, at 27 leagues distance SEbE you have the soundings much the same.

Having had sight of Pulo Pera, leave it to the starboard, and stand toward Pulo Pinang, bearing EbS. 18 leagues from the former, and 3 leagues from the Malaye Coast; between them there is a channel, through which the country vessels trading along this coast usually pass to Queda. Pulo Pinang is about 4 leagues long, north and south; the middle is high, its south point low, and upon its north point is a round hillock, which makes it easily known. The western coast of this island forms a bight, or bay, with a sandy shore. Near the south point of this bay there is an island, upon which may be found very good water.

From Pulo Pinang, S 26° E. 22 leagues, lies Pulo Dinding. Between them it is shoal on the Coast of Malaye. This bank projects 3 leagues, and even 4 leagues

leagues in some places. Those who sail from one to the other with a fair wind, should keep in 20 or 25 fathoms; but if you are obliged to turn it, take care to come no nearer the bank than 10 fathoms, mud.

Dinding Island extends about $3\frac{1}{2}$ leagues north and south; its land is high, and forms 3 or 4 mountains contiguous. The Dutch have here a fort, for the security of their trade to the adjacent parts. South and SbE. are several others of different sizes; the southernmost is 6 or 7 leagues distant from this. These are the Sambelang Islands, or Nine Islands.

Westward of this last, at the distance of 7 or 8 leagues, is a little sugar-loaf island, covered with trees, called Pulo Jarra. You may pass between this island, and those above-mentioned in 25, 28, and 30 fathoms, mud. There is no danger in this passage.

From Pulo Jarra to the islands of Aru, the course is S24°E. distance 22 or 23 leagues. Having passed the former, sailing mid-channel, between that and the islands which lie to the southward of Pulo Sambelang, you must steer SbE. allowing for the tides, which set sometimes toward the Malaye coast, from which you must keep, especially about the islands of Aru, on account of several very dangerous banks opposite to them. If a contrary wind obliges you to turn it, it will be prudent to keep the lead going, and come no nearer these banks than 16 or 17 fathoms. Farther out the depth is irregular, in 30, 35, and 40 fathoms.

When you are $1\frac{1}{2}$ or two leagues past the Aru Islands, steer toward Parcelar.

Those who sail for Masulipatam, or any other place on the Coast of Golconda and Orixá, in the months of January and February, have no occasion to make Negraile, or Cape Negrais; it is then sufficient to cross over to the eastern coast, between the Preparis and Cocos Islands, or between these last and the north point of the Great Andaman Islands. From laying these islands, they must shape a course to get sight of Pulo Bouton, or Pulo Pera, and follow the preceding directions.

Those who sail from Point Gaula on the Island Zeloan, Pondicherry, or Madras, for Malacca, about the end of the western monsoon, may make the Little Andamans, going through the channel on the south side thereof, or that of Sombrere, if you cannot reach the former; from thence sail toward the Coast of Queda, to fall in with Pulo Bouton, or Pulo Pera, as above.

CCLXXXVII. DIRECTIONS *for returning from MALACCA to the COAST of*
 COROMANDEL, BENGAL, *and other WESTERN PARTS, at different Seasons of*
the Year.

The bad weather, which prevails on the Coast of Coromandel and Golconda during the months of November and December, makes it unsafe for ships to arrive there then; so that they are obliged to wait at Malacca till the 10th of December, which is the proper time to undertake this voyage with safety.

Having doubled Fisher's Island, which forms the west side of the road, you steer toward Cape Rachada, and thence to the low point off Mount Parcelar, with a leading gale, the winds blowing then from ENE. to NNE. and observe the tides, to weigh when they are favourable.

As soon as you have passed Parcelar Point, you must steer WNW. till Parcelar Hill bears E½N. then keep it in this direction, to pass between the north and south banks. This course will soon bring you in sight of the easternmost of the Aru Islands. This a little round island on a great rock, which may be seen 6 or 7 leagues; and in clear weather you may see that and Mount Parcelar at the same time.

When you are within 2 or 3 leagues of the Aru Islands, you may sail NW. even to NWbN. Whilst you are within sight of the little rocks which encompass these islands, you are westward of the banks; these consequently are doubled, and will be in mid-channel, between the banks and the islands, when the latter bears SW. 3 leagues. In this track you have soundings from 30 to 50 fathoms, as you near the islands; but it decreases to 16 and 17 fathoms going toward the foot of the north bank.

Keeping NWbN. will bring you in sight of Pulo Jarra, between which and the true Sambelang, or Nine Island, which lie to the southward of Pulo Dinding, the currents generally run NW. and afford an advantage not to be met with on the Sumatra side.

From Pulo Jarra, if you continue your course NNW. and NWbN. you may first see Pulo Pinang, then Pulo-Pera, which you may pass at what distance you please.

From Pulo Pera, if you are bound to Pondicherry, or Madras, you must make the Nicobar Islands, which you may pass between, or go the southward, as you like best. It is reckoned 95 leagues WbN½N. from Pulo Pera to these islands. Several ships pass through the Sombriere channel, which is more

C c c

northerly;

northerly; others bound to Pullicat, or Madras, prefer (at this time) the Ten-degree Channel. Of these you make choice with respect to your consigned port.

If you are bound to Masulipatam, or any other place more northerly, it will be better from Pulo Pera to shape your course to pass between the islands to the northward of the Andamans; this proceeding is surer, on account of the winds out in the bay, which blow from the northward, and the currents running to the southward.

Observe farther (especially in January) to make the land always to the northward of the port you are bound to; and, as you come near the land, keep a good look-out, in order to avoid being deceived by the currents.

Ships from the Gulf of Siam, China, or the Phillippine Islands, which sail in February or March, through the Straits of Malacca, for the Coast of Coromandel, must follow the preceding instruction, and sail by the Nicobar Islands, or through the Sombrere channel.

If you undertake this voyage, from Malacca, in the months of April, May, and June, when the westerly monsoons are settled in these seas, you must, from the Islands of Aru, steer toward the Two Brothers, keeping along the Coast of Sumatra, and the islands to the northward of Acheen, and from thence endeavour to fall in with the Coast of Oriza, in latitude $18^{\circ} 30' N$.

Those who sail from Malacca, at the end of October or November, for the Malabar Coast, must steer from Pulo Pera to go to the southward of the Nicobar Islands; then shape a course to make the Island Zeloan to the northward of the Basses, and sail along the south coast thereof, as shewn in the instructions for voyages from the Coast of Coromandel to that of Malabar.

CCLXXXVIII. DIRECTIONS for SAILING from MALACCA to PULO TIMOAN, through GOVERNOR'S STRAITS, commonly called the STRAITS of SINGAPOUR.

When you weigh from Malacca Road, pass without the Water Islands, the southernmost of which bears SEbS. about 4 leagues from the road, and may be coasted at about half a league distance. Having passed it, steer SE. to give a good birth to Formosa River, before which there is a bank, whose outer verge lies $1\frac{1}{2}$ league from the coast, in soundings from 18 to 22 fathoms, in some places sandy. This bank lies along shore SEbE. and NWbW. about 2 leagues off shore. From the SE. end Mount Formosa bears NEbN. and Mount Moor NWbN.

NWbN. and from the NW. end (just without the bank, in 5 fathoms, hard ground) these hills bear E $\frac{1}{2}$ S. and N. or NbW.

ESE $\frac{1}{2}$ E. 6 $\frac{1}{2}$ leagues from the southernmost of the Water Islands, lies Mount Moor, remarkable for the land about it being all low and woody; from thence to Mount Formosa the coast stretches SE. and SEbE. Mount Formosa bears off the outermost Water Islands ESE $\frac{1}{2}$ S. 11 leagues, and off Mount Moor SE. 4 $\frac{1}{2}$ leagues. This last is more distinct than Mount Moor. The bank above-mentioned bars up the River Formosa, and permits no nearer approach to the coast than 5 or 6 miles. If you turn it, keep your lead continually going, that you come not too near its verge.

From Mount Formosa to Pulo Pisang, the direct course is SE $\frac{1}{2}$ S. 10 leagues. Having doubled the bar off Formosa River, you steer along SE. and presently raise this island, about 2 leagues from the Continent, forming a channel, in which there are not less than 4 fathoms water. On the west side of Pulo Pisang are three other little islands; the largest affords good water, and boats may land there commodiously at high water, in a bay on the NW. side. Ships generally pass without these islands, but not under 9 fathoms, by reason of a sand-bank that surrounds them, and extends itself a mile without all. In this channel, at a league, or a league and an half off Pulo Pisang, you have 18, 20, and 24 fathoms, mud; and have nearly the same soundings all the way from Mount Formosa.

To the westward of Pulo Pisang, about 3 leagues off, there is a bank, very dangerous for its irregular depths, which on the NW. part (particularly) changes suddenly from 25 to 4 fathoms; and you may conclude the like all over it. This bank lies about WNW. and ESE. 7 or 8 leagues, from the westernmost part of which Mount Formosa bears NEbN. and Pulo Pisang EbS. just in sight; and from the easternmost end Pulo Pisang bears from ENE. to NEbE. This channel, in the narrowest part (which is off Pulo Pisang) is about 2 leagues over; and the leading mark through, is to keep Mount Formosa NNW. westerly, or the Great Cariman SSE. easterly, 'till Pulo Pisang bears NE. and then you may steer more easterly. Some think this channel is but 4 miles wide.

This bank extends more northerly than is laid down in most charts of this strait. The passage next the Coast of Sumatra (which may be seen to the SW.) is exceeding dangerous; it is not adviseable to try it. If, sailing from Malacca to Pulo Pisang, in the night-time, you should be hurried by the rapidity of the tides to the westward of this bank, you must steer to the SE. along its verge on

that side, without approaching the Coast of Sumatra, 'till you bring Pulo Pisang to bear ENE. then you may stand to the eastward, toward the Coast of Malacca, and regain the good channel.

The tides between Malacca and Pulo Pisang flow N. and S. (or at 12 o'clock) full and change; the flood to the SE. and the ebb (which is strongest to the NW. Though this is the general rule, yet it frequently varies; for to the eastward, beyond Pulo Pisang, these tides are exceeding irregular, running sometimes for 20 hours one way, and 18 hours the other way, especially in the Sincapour and Governor's Straits, and at the east entrance of the Straits of Malacca; so that there is no dependance on them. The skilful navigator will make advantage of them, when they are favourable to his purpose, and \rightarrow when they are contrary, unless by a fresh of wind he can stem them.

As soon as you are past Pulo Pisang, the Island Cariman may be seen to the south-eastward, distant about 8 leagues. Your course is SEbE, to near Pulo Cocops, a small even island, covered with trees; and a little distance from the Coast of Malaye. It is so close to the Malaye shore, that you cannot distinguish it to be an island 'till you have passed it; but it may be known by the trees being of a very bright green. A point of land on the continent adjoining, called Tanjong-Bouro, or Tanjong-Boulus, and the Little Cariman, bear NE. and SW. $3\frac{1}{2}$, 4, or 5 leagues one from the other.

It is (SE $\frac{1}{2}$ E.) about 6 leagues from Pulo Pisang to Pulo Cocops; between them lies a small bank, which you may avoid, by keeping a little off the Coast of Malaye. The Malaye shore between these two is pretty level; to which come no nearer than 15, or on an emergency 12 fathoms; nor under 15 fathoms toward the Sumatra shore, under which is foul ground, and shoal water; particularly when the easternmost point of Cariman bears SE $\frac{1}{2}$ E. about 5 leagues, and Pulo Pisang N $\frac{1}{2}$ E. about $4\frac{1}{2}$ leagues, it shoals suddenly from 15 fathoms soft to 9 fathoms hard ground. In this channel you have soundings from 18 to 20 fathoms, mud; and about a league off the latter you have 16 fathoms. Beyond Tanjong-Bouro, the Coast of Malaye forms a bay, wherein some little rivers empty themselves, on the east side whereof is a little island, called the Island of Adders or Snake Island, between which and the westernmost point of Pulo Pisang (called also Long Island, also Sincapour, or Sincapore Island), is the entrance of the Old Straits of Sincapour; and to the southward of the said point you see also the entrance of the New Strait, so called. But most ships, at present, prefer Governor's Strait to either, as being both shorter and safer.

Being

Being past Pulo Cocops, if you keep on SEbE. you will get sight of two little islands at some distance from each other, but nearly alike in size and height; they are called the Two Brothers (by some), and lie on the east side of the Straits of Durion, or Dryon; keeping these to the south-eastward, endeavour to get sight of Tree Island, which is a bank of sand, almost even with the water, upon which there are 5 or 6 clusters of shrubs. At high water it is almost entirely covered, and you can distinguish only the bushes. It is steep to, and therefore dangerous to approach it in the night, especially as you can form no judgement of its distance by the soundings; for which reason, if they cannot be seen, come no nearer than 15 or 16 fathoms. Between Pulo Pisang and Governor's Straits, the tides are very irregular; from this island to that of Cariman, the flood generally sets from SEbE. to EbS. and afterward runs ENE. when Cariman bears SE. To the southward of Tree Island it is very dangerous, as there is a reef running therefrom a great way; for which reason ships bound through Governor's Straits always go to the northward thereof; and those who are bound through the Straits of Durion, or Dryon, give it a large birth.

Five Miles EbN. from Tree Island, is situate Square or Passage Island (commonly called Barn Island), to the northward of which are two others, bearing off each other SbE. and NbW. and near its south point are two great rocks, which form the north side of the entrance of Governor's Strait; the southernmost of which is called the Viol, on account of its similitude to that instrument at a certain point of sight. The islands are called Rabbit and Coney by the English; the northernmost Rabbit, and the southernmost Coney. They are steep to. Mr. Nichelson makes them in one NbE½E. and SbW½W. and says he was very particular in making his observation thereof.

On the other side of the entrance of this strait lies Red Island, bearing SWbS. about a league from this last; it is a small island, so called from the colour of the sand and earth: on the top of it are several green trees, and it is a sure mark for this passage. The Tree Island abovementioned is distant from it 1½ league to the north-westward. In case of necessity you may pass a-breast Red Island, in 18 fathoms water; but come no nearer it, on account of several rocks that surround it.

To enter this strait, when you have sight of Tree Island, steer for the south point of Passage Island; and being up with it, you may round the little island, called Viol, at what distance you please: then steer EbN. for the south point of St. John's Island, which bears thus from you; its distance is about 4½ leagues

leagues from Passage Island. You should not sail along the south side of this passage, as it is encompassed with several rocks, which being mostly covered at high water, make it very dangerous. The same reason will hinder you from entering the bay on the north side, wherein are found many little islands; but keep directly in mid-channel. You are not long getting through with the tide; it runs here very strong. In case of wanting wind or tide to get through before night, there is good $\frac{1}{2}$ -ing ground under Barn Island, in from 7 to 10 or 12 fathoms, the island bearing from NE. to the SE. 1 or 2 miles off shore; also under St. John's Island, in from 12 to 18 fathoms, the said island WSW. or SWbW. 1 or 2 miles; where (and on most of these islands) you may have plenty of wood for cutting, and water. There is also a bank in the fair-way, between these islands, on which, if belated, you may $\frac{1}{2}$ -ing, in 16 or 18 fathoms. As to the depths, they are very unequal, as 20, 30, 35 and 40 fathoms, between Red Island and the Viol; beyond these you have various depths, as 30, 50, 80, and 25 fathoms near St. John's Island.

The following are the most known dangers on the south side of this channel.

SEbS. of Passage Island, about 1 $\frac{1}{2}$ league, there is a reef of rocks, which are only to be seen at low water: they are about a quarter of the channel from the south side.

Two leagues and an half EbS. of the same island, there is a single black rock above water, about the size of a long-boat; it is about one third of the channel from the south side: it is so very steep, that close to it you are in 17 fathoms, and a little more westerly in 30 fathoms. This is by some called the Elephant, and by others the Buffalo, and is said also to bear SW $\frac{1}{2}$ S. 2 leagues from St. John's Island.

SE $\frac{1}{2}$ S. of St. John's Island lies a reef of rocks, even with the water, and 2 leagues farther WbS. of these, there are others, bearing SW $\frac{1}{2}$ S. of the same island. It also bears EbN. 2 leagues from the Elephant, or Buffalo; but there is also a shoal without it, which bears SEbE. from St. John's Island; between which islands and the rocks are soundings from 15 to 20, 30, 40, and 50 fathoms, and then shoals suddenly to the southward.

To the westward of St. John's is another island, which being only separated from it by a little channel, appears to be the same. You may sail along St. John's Island at half or three-quarters of a league offing; from thence steer EbN. this will bring you in mid-channel, between the White Rock and Point Romania,

Romania, which two form the mouth of the Straits of Malacca to the eastward.

At the east end of Pulo Panjang, or Sincapour, is a shoal, projecting to the south-eastward, $2\frac{1}{2}$ leagues therefrom, even as far as the mouth of the river Joor it is steep to, having from 10 to 15 fathoms just without it, when Point Romania bears E $\frac{1}{2}$ N. 6 leagues; St. John's Island about the same distance WSW. and the easternmost point of Pulo Panjang NWbN. $2\frac{1}{2}$ leagues, and Joor or Johor Hill NE. By keeping about 3 leagues off shore, in 20 fathoms, Point Romania bearing EbN. or a little more northerly, and St. John's Island WbS. or a little more westerly, you will go far enough without it.

The extremity of Point Romania is low; but on this side of it rises a little hill, called Barbucet Hill, which in coming from the northward, serves for a mark to enter the straits. To the eastward of Point Romania are several large rocks above water, encompassed with many others underneath, which together form a very dangerous reef for $1\frac{1}{2}$ or 2 leagues without all. There is also a passage between the continent and this bank; but you should not attempt it, even in a small ship; though those who have passed through it say, there are not less than $3\frac{1}{2}$ fathoms water in it. The surest way then will be to pass to the southward, between this reef and the White Rock, bearing SSE. 8 miles off Point Romania. This rock is very steep, and covered with bird's dung, which makes it look white, and which you may pass to the northward, within half a league, without any hazard. The depth increases in the fair-way from 28, 30, to 35 fathoms.

The passage to the southward, between the White Rock and the Island Bintam, or Bintang, is full of rocks; therefore make choice of that to the northward, which has none.

From St. John's Island to the White Rock, you must still avoid the south shore, its bottom being very foul. Having passed the White Rock, when it bears SW. you steer NNE. to give a good birth to the bank off Point Romania, coming no nearer it than 16 or 17 fathoms; besides which there is no danger here, by night or day.

The flood tide runs strong into these Straits, NW. and the ebb longer and stronger. ENE. in the SW. monsoons, and the contrary in the other monsoons. The time of flowing on full and change days is uncertain in both; only in the former it flows nearest north and south, (or at 12 o'clock) but in the latter it has a greater dependance on the winds, the flood running in when it blows fresh frequently for 12 hours together.

The

The variation is about 2° north-westerly throughout these straits; nor has it varied much for many years.

When you have doubled this bank, steer NbE. toward Pulo Aor (or Pulo Aur) which bears NNE½N. 30 leagues from Point Romania. You pass to the eastward of Pulo Tingy, an high land, which at this bearing makes in a peak, rising gradually from the east coast. To the southward of this island there are some small islands; and SEbS. 3 leagues, there is a rock at the water's edge, which you must avoid in sailing toward Pulo Aor (or Aur).

This last lies about 6½ leagues to the E. north-eastward of Pulo Tingy; it is very high land, making in a saddle, and when it bears NE. its two extremities appear higher than the middle; but the easternmost is the highest. When it bears NW. it hath a difference, the two little hills shut in one. Near the SE. point is a little island covered with coco-trees, and 3 or 4 others on the north side. This island affords water, and some refreshments. You may go either off a small sandy bay to the eastward, or another to the westward; the former in the western monsoon, and the other in the eastern.

Most ships bound to the Gulf of Siam, after doubling the reef of Point Romania, keep along the Malaye coast, in 14 and 15 fathoms; passing to the westward of Pulo Tingy, and the islands to the northward, through the channel, in which there are not less than 8 or 9 fathoms.

The following is an extract from a journal of a very expert navigator, who sailed to the eastward of Pulo Tingy, and passed to the northward, between that and the island lying to the NW. thereof, and which will afford some knowledge of these parts, as far as Pulo Varella, which lies 9 leagues NWbN. from the north point of Pulo Timoan, or Timoon.

June the 17th, 1682. Sailing from Pedro Branca, or the White Rock, we stood to the eastward. 2, or 3 leagues, rather for form's sake than through necessity, to double a bank, which the Portuguese charts make to run out a good distance from Point Joor (or Point Romania). I saw no likelihood of its projecting so far out as these charts represent. I steered north and NbW. with a steady gale at WSW. to get sight of Pulo Tingy; and though the tides were against us, that did not hinder us from perceiving (about midnight) Pulo Tingy, from NNW. and NWbN. of us, and Pulo Aor north, so that on the 18th day at noon we were a league to the northward of Pulo Tingy; there I observed, in a little bay on the north side thereof, some banana-trees, palm-trees, and huts. The depth off this bay, at the above distance, is 14 fathoms,

fathoms, sand and ouze. We steered WNW. and NWbN. to go between Pulo Tingy and a large island to the north-westward, which, when it bore NNE. we stood to the northward; leaving the islands near the shore on the larboard, and leaving on the starboard this large island, which is long and high, lying north and south, and the western shore embellished with a border of fine white sand. Throughout this whole track we found 14, 12, 8, and 7 fathoms, sand. About a gun-shot from this great island, there is a lesser one, but high like the first.

Having been set off to seaward from the continent, and being about 1 league to the eastward of the north part of this island, in order to get in with the land again, we steered NNW. and NWbN. so that on the 19th at noon, Pulo Varella, a little island, which lies off the continent of Malaya, bore east 3 leagues of us. In this track we had 10, 8, and 6 fathoms, sand, gravel, and sometimes ouze; at the same time Pulo Timoan bore from SE. to SEbE. about 11 or 12 leagues. The land of Malaye, thus far, is low by the sea side, with a sand shore and some downs. The winds blow in the day-time, from the SE. and in the nights shift round to the westward, till about 10 or 11 o'clock in the forenoon.

By this extract you may safely pass between these islands and the main. Nevertheless, those who sail this way, should keep a good look-out for some rocks, laid down in some draughts; between this island and the main, near the water's edge.

To the north-westward of Pulo Aor is situate Pulo Pisang, which, like Pulo Aor, appears about 2 leagues long, at this bearing. The channel, between the islands north of Pulo Aor and the south point of the other, is about 2 leagues wide, and free from danger.

The body of Pulo Timoan bears NNW. of Pulo Pisang; and from the north point of this it is computed 3 leagues to the south point of the other, near which is a little island, or rock, which must be coasted to the southward, when you sail through the channel for the west part of Pulo Timoan.

The latitude of the middle of Pulo Timoan, is $2^{\circ} 50' N$. It is the largest of all these islands, and so high, that the top of it is sometimes hid by the fogs; and there is one mountain terminating in two points, like the ears of an hare, which navigators have therefore called by that name. There is good \rightarrow age and good water on both the east and west coasts; the dangers are all apparent, and the bottom clear: it is said, that this island is the most plentiful in refreshments, and very proper to put in at. The most considerable village is in the

SE. part, at the bottom of a little sandy bay, where you may \leftrightarrow in 20 or 22 fathoms, sand.

At which-ever of these islands you land, you must be on your guard against the inhospitable disposition of the Malayes, or inhabitants, and not trust to their fair appearance; this they do but put on, the easier to surprise strangers unawares. The safest way will be, not to go on shore without being well armed; and to be careful not to go far from the sea side, but make them bring the commodities you would purchase.

At the NW. end of Pulo Timoan are 3 little islands, between which and the great one the channel is very deep, and consequently sure; near the latter, under shelter of these little islands, there is very good \leftrightarrow age in 12 fathoms.

To the eastward of these islands, about 23 leagues from Pulo Aor, you meet with another cluster of islands of different sizes, called the Anambas, which are very high; but neither their number, nor their respective bearings, appear to have been known. The ancient charts represent them as a confused heap, without distinguishing or giving name to any one of them: the journals of some navigators, who have fallen in with them, make between them several passages; but what they have said concerning them is not circumstantial enough to correct the old charts by, and make one more accurate.

Fourteen leagues EbN. from Pulo Aor, there is a little island, or rock, to the westward of the Anambas. This little island is named Domar in a Portuguese chart, drawn in 1687. It is said to lie pretty near in the fair-way between Pulo Aor (or rather Pulo Pisang) and the Anambas. It is as high above water as a ship's main-top, and twice the length of a large ship; so that there is no fear of it in the day-time; but you ought to be cautious of it in the night. It lies about 6 leagues from the Anambas, and bears about east from Pulo Pisang. Pulo Pisang, Pulo Aor, and this rock, have been seen at the same time. Capt. Vincent fell in with it by design, in July, 1758, and makes it to lie N87°W. 6 leagues from the westernmost part of the Anambas, in sight at sun-set, when he also saw another island, bearing W $\frac{1}{2}$ S. which he thinks could be no other than Pulo Aor. Having had a good observation at noon, he makes the latitude of Pulo Domar 2° 43' N. and about 8' or 10' W. from Pulo Taya, by his run from thence; though he supposes he may have been set somewhat to the eastward by the current, as is usual at that season.

To the north-eastward of the Anambas, there is another cluster of islands like the last, called the Natunas, which are as little known as the others.

If you are coming from the Gulf of Siam, Manilla, or China, in the eastern monsoons, and are bound through the Straits of Malacca, after you have passed Pulo Aor, steer SbW. in 30, 25, 20, and 18 fathoms, black stiff mud, intermixed with some fine sand; but take care of the Sunken Rock in the fairway. On approaching the reef off Point Romania, when in 16 fathoms you can see that point, and the low land near it: come no nearer the reef than 15 fathoms, till Barbucet Hill bears WbN. or W. and Bintam Hill SbW½W. and the White Rock SWbS. 2 or 3 leagues; then you may round it, steering SSW. and SWbS. to SW. as far as west, leaving the White Rock on the larboard hand, off which the depth increases to 20 and 30 fathoms.

At the entrance of the strait, the tides run in and out with great rapidity; but in the north-east monsoon, stronger and longer, even at the rate of 3 or 4 leagues in an hour, running thus 12 or 14 hours without ceasing: in the spring their course is so irregular, that no certain rules can be given concerning them.

If coming from the northward with a strong gale of wind, and you think you cannot enter the strait before night, it is better to ↗ at Pulo Aor, and weigh from thence so as to be able to reach the strait, and get in by day-light. You must, at this season, ↗ off a little sandy bay, on the west side of the island, in 25 fathoms, the extremities of the island from NNW. to ESE. When you sail from this place, you steer, at first, due south, to avoid the rock, which lies 3 leagues SEbS. off Pulo Tingy; then SbW. and for the rest conform to the directions already given.

From the White Rock or its offing, you steer west to Joor River; then WbS. to the south point of St. John's Island, on which are several tall trees, and a small island on the south side. In this track you must take heed of a bank, which projects from Pulo Panjang. There is no danger by keeping in 18 or 20 fathoms; but let not the fear of approaching it induce you to take the larboard, or south side; there the dangers are more than to the northward.

Having passed St. John's Island, if you have not wind enough, or the tide proves contrary, to get through Governor's Straits, you may ↗ about a league SW½W. of St. John's Island, in 18 or 19 fathoms. A little more southerly there are also other proper depths; but the bottom is foul, therefore it is not adviseable to ↗ there.

From this place, steer WbS. toward the island called the Viol, at the south point of Passage or Barn Island; and having passed it, steer NW. or a little more northerly, if the tides set upon Tree Island: when you are past that,

steer WNW. for the channel, formed on the SW. by the Little Carimon, and on the NE. by Pulo Cocops and Tanjong-Bouro. This passage is very safe, though the depths are irregular, from 16 to 24 fathoms.

It is generally better to keep on the NE. side than mid-channel, because the tides that come out of the Old Strait of Sincapour set to the southward; observe therefore which way they run, in order to guard against them accordingly.

It is about 6 leagues from Pulo Cocops to Pulo Pisang, which last should be coasted at about a mile distance along the foot of the bank which surrounds it. From thence the course is NW. Regard the bank lying WSW. of this island, and give a good birth to that off Formosa River; which being passed, sail close round the southernmost of the Water Islands, and steer NWbN. for the Road of Malacca.

CCLXXXIX. *Captain John Hallet's DIRECTIONS for SAILING through the STRAITS of DRYON.*

When you have rounded the Little Carimon, keep in about 10 fathoms till you have the opening fair between the great Carimon and Sabone; then haul in 7 or 8 fathoms, and keep that depth on the starboard shore, and this will carry you clear of Middle-borough Ground (if there be any such thing) being informed by a Dutch commander that it lies near the Two Twins. When these bear EbN. they will be open to you; and when they bear NEbE. they will be shut in behind a bluff round island, which is of a reddish colour near the water; then you may keep mid-channel.

When you first open the Twins, you will see a small island with a tree or two on it, between the Twins and the Bluff Island; but it lies without them considerably, as you will perceive it in running down the straits. Probably this is what is laid down for the shoal.

From the aforesaid islands and bearings, steer down the straits, about SbE. or SbE½E. (having respect to the tides, which set strong and very uncertain). You will deepen your water to 12, 13, or 14 fathoms; and as you run on, you will see the opening between the north and the south Dryon, beginning to open EbS. southward from you. When the opening bears east, you will bring a round island between you and the gap: and when it is on your larboard beam about three quarters of a mile, you will have another island on your starboard beam, distance about 2 miles, and in 20 fathoms. This is the narrowest part.

From

From this opening, you keep nearest the larboard shore ; and about 3 miles SSE. from the island you passed, on the larboard beam, is another ; this you must give about a mile's birth, because of the foul ground about it. As you round this island, you will open the easternmost of the Three Brothers bearing SEbE.

When round this island, you haul up ESE. and EbS. between the south Dryon on the larboard side, and a large island with high land on it on the starboard side. This part is about 5 miles over, and 17 or 18 fathoms all through, till you bring the southernmost part of the south Dryon, NEbN. or NNE. and the easternmost of the Three Brothers SE ; S. and then your water shoals gradually to 13 or 12 fathoms.

Off the southernmost part of the south Dryon, close in shore, lie three small islands, and a shoal without them ; therefore come no nearer than a mile to the islands, the westernmost of which makes like a tomb-stone.

There is a passage between the Three Brothers, but it may not be very safe ; therefore, if the wind and tide will permit, it is safest to go round the easternmost, and you will find regular soundings of 12 and 13 fathoms, mud.

From hence shape your course for the Calentagas, which lie north and south about 13 leagues in length, in soundings from 17 to 30 fathoms, mud. Here are strong tides, therefore it is best to \rightarrow in the night.

When the Calentagas bear south, 5 or 6 leagues, you have 13 fathoms, mud. When you bring the northernmost to bear SEbS. 4 miles, you have only 9 or 7 fathoms, hard ground ; this is taken to be the end of the sand, that runs off from Tanjong-basso Point ; for hauling in toward the islands, the ground has been found, sometimes hard, and sometimes soft. They have been rounded from 7 to 9, and from 9 to 7 fathoms, mostly hard ground ; and when they bore NNE½N. all in one, 5 miles, had 7 fathoms, soft mud, and afterward hard ground. The southernmost bearing NbW½W. 2 leagues, had 9 fathoms, mud, and the islands all open again. When it bears NNW. 4 leagues and 11 fathoms, mud, you will see Pulo Barella ESE. 7 or 8 leagues. If you go to the westward of these islands, there you will meet with 10 fathoms, mud, all through, and no danger, keeping nearest the islands on the east side of you, to avoid two sunken rocks, which lie about a league off the Two Brothers. There are several rocks about these islands ; but none far off, that are known, except the above two.

Pulo Barella lies SE. 11 or 12 leagues from the southernmost of the Two Brothers ; for which shape your course, leaving it on your larboard side, about
3 miles

3 miles in 9 or 10 fathoms ; and if you find hard ground, haul in for Tanjoon-boon Point ; but do not go under 5 fathoms water, there being off it very hard sand, and steep to. When you bring the sand point west, haul in 7 fathoms, and go not without that depth, till you round Batacarang Point.

CCXC. DIRECTIONS for SAILING from PULO TIMOAN to SIAM in the WESTERN MONSOONS.

The situation of the places, and the winds which blow from SW. to W. throughout the Gulf of Siam, at this season, prove the necessity of keeping along the western coast, in order to save your passage, or at least to render it less tedious and hazardous ; therefore, if you sail without Pulo Timoan, from its north point steer NNW. to make the Coast of Malaya, and then sail along shore, in what depth you please ; for it is every where safe, the land high, and bordered with a sandy beach.

Pulo Varella bears NW. 9 leagues of the north point of Pulo Timoan ; it is properly only a large rock ; but in passing it to the eastward, take care of a rock under water, about 5 miles NEbN. off this island.

If you continue the before-mentioned course, you will see Pulo Capas, in latitude $4^{\circ} 57'N$. 7 leagues from the Malaye Coast, and 39 leagues NNWbN. of Pulo Timoan. This island is high, and may be seen 10 or 12 leagues. You may pass on either side of it, in 20 or 25 fathoms. If you go without all, you must take care of a reef, which projects about half a league from its north point ; this is the only danger about it.

The Ridang Islands lie NWbN. of Pulo Capas, the south-easternmost being about 10 leagues therefrom. They are high, many of them extending about 16 leagues NW. and SE. along the coast ; and though they form a channel on that side, the best way is to pass without all, at half a league distance, in 25 or 30 fathoms.

To sail between these islands and the continent, as soon as you have doubled Pulo Capas, you will see, along the coast, a long barren island in latitude $5^{\circ} 15'N$. You sail along the east coast thereof, and from thence through an exceeding small, experienced channel, between the two south-westernmost islands of this archipelago ; that to the NE. is high and round, with several sandy bays. In this narrow passage you have 9, 10, 11, and 14 fathoms water. The following extract from a journal will better inform you of the necessary precautions for passing between these islands.

The

The 21st of June we lay off a long and barren island, in latitude $5^{\circ} 15' N$. The charts lay down a bank along this coast; nothing of it, nor any sign thereof; we had soundings from 22 to 18 fathoms. About 8 P. M. we passed between the two south-westernmost Islands of Pulo Ridang, in 9, 10, 11, and 14 fathoms, steering NWbN. they are about two cables length apart. From thence stood NNW. and sometimes north, leaving on the right hand the other islands, where the depth is found from 14 to 25 fathoms, from that on the starboard, to another long one which lies on the larboard, having 22 fathoms close to it. NW. of this island there are two larger ones, and NW. of them 3 or 4 little islands, among which is one much higher than the rest, making like a sugar-loaf. That nearest the continent is rocky, and bluff to the northward; the north-westernmost has a rocky point, projecting a quarter of a league.

In this cluster, or archipelago, are reckoned 13 or 14 islands; among the rest, Pulo Ridang, which is large and high. The northernmost of the other two (between which we passed) is high, round, and has some strands of sand. There are 9 or 10 other islands to the north-westward, 5 or 6 leagues from Pulo Ridang; 3 of which are large, and 4 others small. Coming from the southward you leave them on the larboard, to prevent entangling yourself between them and the continent, as there are some dangers which may be seen off these islands. Half a league beyond these is the low land of Malaye.

The 23d at noon, observed in latitude $6^{\circ} 10' N$. This coast trenches SE. and NW. a little to the southward; northward it is low, and forms little bays: the depth, from these islands to within about 2 leagues of the land, is from 18 to 15 and 10 fathoms. At night you have land breezes, and in the day-time the squalls are pretty strong.

The 24th at noon, the latitude observed was $6^{\circ} 36' N$. From hence we first saw the land about Cape Patani. All this coast is low near the sea side; but in land are high mountains, winding with the shore, which is very full of bays. You have here 20 and 24 fathoms, mud. Thus far from the journal.

If you sail without the Ridang Islands, after passing the latitude of the northernmost, haul in for the continent, which from latitude $6^{\circ} 30' N$. to Cape Patani, in latitude $7^{\circ} 4' N$. stretches to the north-westward. This coast, as appears from the extract above-mentioned, forms several bays, is low toward the shore, and hilly in the country.

About

About 14 leagues off Cape Patani lies Pulo Lozin. The winds in the western monsoon require you to keep in sight of the Malaye coast rather than this last. Beyond Cape Patani the coast forms a great bay, very shallow, off which it generally blows very fresh.

When you are about 4 or 5 leagues to the westward of Cape Patani, shape your course for the Island Tantalum, which you may coast in 12 or 14 fathoms. The north point of this island forms the east side of Ligor Bay.

Pulo Cara, or the Islands of Cara (being three in number), lie north and south, in latitude $8^{\circ} 30' N.$ about $7\frac{1}{2}$ leagues to the eastward of the north point of the Island Tantalum. The northernmost, and largest, has on the SW. side a sandy bay, in which (some navigators affirm) is to be found fresh water, descending from the top of the island to this bay. The southernmost is only a large rock, which appears white, coming from the southward. On the same side, about two cables' length from its extremity, there is a flat rock, near the surface of the water.

The passage between these islands and the continent is very good, having from 14 to 18 fathoms, 2 or 3 miles off shore. After you have passed them, steer NNW. toward Pulo Carnom, distance therefrom 32 leagues on this point of the compass, in soundings of 20 and 18 fathoms. Before you get the length of Pulo Carnom you will see, to the westward, near the coast, a considerable cluster of islands and rocks, called the Larchin Islands: to the eastward of these there is an high land, called by some Point Lornont.

Pulo Carnom, at first sight, seems to form two islands, by means of two mountains, separated by a valley, which is not perceptible above 4 or 5 leagues distance. This island may be coasted as near as you please, having no less than 10 or 12 fathoms a league off shore.

To the NWbN. are two islands, of about the same height as Pulo Carnom: the first is called Sancory; the other, near the continent, is called Barda, or Bardia. The former is but 7 leagues from Pulo Carnom, and the latter $7\frac{1}{2}$ leagues from Pulo Sancory. You need not go near them; but from Pulo Carnom steer north, toward Cin Point, bearing about $N\frac{1}{2}E.$ 40 leagues. It may be seen a great distance, by means of the Mountains of Pensels, which are quite close to it. Just at the pitch of this point are two little islands; the coast beyond lies mostly NNE. and SSW. off which there are good soundings. You may sail along it without fear, 'till you come near the Road of Pepery, to the southward of which is a bank, which projects about 4 leagues into the sea; it is necessary to keep the lead going, especially as you near it. If you do

not

not stop here, after you are past the bank, steer NEbE. and ENE. 7 leagues, to \rightarrow before Siam Bar, making proper allowance for the tides.

The islands, which form the different mouths of the River Menam, are so low that they can scarcely be seen 3 leagues off. The chief passage is known only by the coast's beginning here to rise a little higher, and being more woody. The \rightarrow age is to the southward, in what depth you please.

The city of Juthia, the capital of the kingdom of Siam, is situate upon an island, formed by this river, 16 leagues to the northward of its mouth.

Twenty-two leagues SbE. from Siam Bar may be seen Cape Liant; it bounds on the east side that part of the gulf which the sailors call the Bay of Siam. To the northward of this cape are several islands of different sizes, and many other lesser ones to the southward and westward. It is affirmed they are safe, and may be coasted without danger.

CCXCI. DIRECTIONS *for RETURNING from SIAM to PULO-TIMOAN, in the EASTERN MONSOONS.*

To sail from Siam for India, or any other part to the westward, you must wait for the easterly monsoon, as the only season in which you can undertake this voyage.

The winds begin to vary about the month of September, and in October the monsoon generally breaks up with violent storms from the SW. quarter, which renders the navigation of these narrow seas rather dangerous; but in November the weather is fair and settled: then this navigation is become safe and commodious for such voyages as are usually undertaken at this season. The currents set with the NE. monsoon on the west side, and against it on the east side of this gulf; and the reverse during the SW. monsoon.

When you sail from the road of the Bar, shape your course to round Cape Liant and the islands that surround it; then steer SEbE. to make Pulo Way, in latitude $9^{\circ} 55' N$. You may near them, as they are high and safe without-side.

Between Cape Liant and these islands the soundings are mud, from 45 to 35 fathoms, just in sight of them. If in their latitude you do not see them, and have soundings from 50 to 45 fathoms, it is a sign that the currents have set you to the westward, as it generally happens in this monsoon; then you must luff up, and endeavour to see Pulo Panjang. It is necessary to see this last, although you have seen Pulo Way: then bear away. You have 35
 E c e fathoms,

fathoms, mud, 5 leagues to the westward. This island is high, and encompassed with several little islands. It is proper to bring it to bear north, before you begin to bear away; then it is necessary to steer SbE. to get sight of Pulo Timoan.

It sometimes happens, that, in crossing the gulf, one falls in with the Malaye Coast sooner than expected; therefore look out in time. Some navigators give, as a sign of approaching it, soundings of coarse sand; whereas afar off they are mud. This token doth not appear to be certain. The latitude of Pulo Capas once passed, all the Malaye Coast is safe, and the decrease of the depth is a sufficient caution to prevent your running ashore there in the night-time.

If, on the contrary, you are in less than latitude 5° N. and have 45 fathoms, it will then be necessary to stand in with the land, to get into less water; thus you will not fail to make Pulo Timoan, and thence Pulo Aor, from whence you sail toward the Straits of Malacca; and if you design to pass that way, conform to the preceding instructions.

CCXCII. DIRECTIONS for SAILING from PULO TIMOAN to PULO CONDORE,
in the WESTERN MONSOONS.

Pulo Condore bears $N26^{\circ}$ E. distance 125 leagues from Pulo Timoan. Those who sail from one to the other must not content themselves with shaping their course according to their situation, but must be careful to guard against the currents, which in this monsoon set to the eastward, and generally cause some difference. Their velocity doth not depend upon the force of the wind, as several pretend; for it hath been observed, that with a moderate breeze the difference has been as considerable as with a strong gale; and experience invalidates the opinion of these currents and the wind having the same direction, since from a S. and SSW. wind you find (contrary to this rule) as great difference to the eastward, as with the wind at WSW. therefore this opinion must be false.

In the first case, where the direction of the wind is the same with that of the two places, the only difference is, that you make a quicker passage than was expected; yet this doth not oblige you to take a sweep more one way than another. In this part, it is difficult to settle a certain rule concerning the direction and strength of the currents; you may, however, be sure of making Pulo Condore, if, sailing from Pulo Timoan, you steer NbE. 65 leagues, then
NNE.

NNE. This is the way to prevent the usual fet of the currents, and to get sight of this island, which may be seen 15 or 16 leagues in clear weather. At 5 or 6 leagues to the southward, there are 21 or 22 fathoms, fine grey sand with small shells.

If you have this depth, in latitude $8^{\circ} 20'N$. without seeing it, and, by standing N. or NNE. it decreases to 17 or 18 fathoms; this will shew that you are to the westward of Pulo Condore: on the other hand, if it increases to 24, 25, and 26 fathoms, you will find yourself to the eastward thereof.

WbS. 25 miles from Pulo Condore, are two little islands, or rocks above water, called the Two Brothers, about $1\frac{1}{2}$ league from each other. The passage between them and Pulo Condore is clear and safe.

CCXCIII. DIRECTIONS concerning PULO CONDORE.

Pulo Condore is not one island only, but several, near one another. The name is derived from two Malaye words; the first of which, Pulo, signifies an Island in general; and the other, Condore, implies Calabash: this name was given them from the great number of trees here which bear this fruit. They are all very high, and covered with trees. Their situation, according to the observation of P. Gaubil, is in latitude $8^{\circ} 40'N$. and $105^{\circ}E$. of Paris, or $107^{\circ} 25'E$. of London; and they bear SbE. 17 leagues off the mouth of Cambodia River.

These islands may be divided into large, middling, and small. The large one (which is the only one inhabited) is about 3 leagues in length, and half a league is its greatest breadth: it lies NE. and SW. It is (properly speaking) a chain of high mountains, very difficult to pass, extending from one end to the other, and separating the harbour from the great bay where the natives dwell.

The middling one is as mountainous as the largest, but not so high; its length is one league, and its breadth half a league. It lies SE. and NW. Its advantageous situation to the westward of the great one, forms, between the two, an exceeding good harbour, capable of containing 8 ships; its entrance is half a league wide, and the bay is equal to the length of the middling island; but ships cannot get to the farther end for want of water. Here the great and middling islands are so near, that there is but a narrow passage left for boats, canoes, and proes. The tides, at the full and change, flow here NE. and SW.

or at 3 o'clock, and the sea rises and falls 3 feet. The heights of the hills darken this harbour, and render the air thick and very unwholesome.

On the other side of the hills, at the SE. part of the great island, there is a very spacious bay, at the entrance of which, some little islands are so disposed, that they close it up, as it were, half-way; so that the passage would be very good and safe, if the bay was not so wide, and so much exposed to the winds which blow in the easterly monsoons. Its chief entrance is to the SE. The other two are neither so good, nor so convenient. Within this bay, upon a marshy and sandy plain, about 3 quarters of a league long, and one quarter wide, are dispersed (here and there) irregularly, the huts or dwellings of the inhabitants, to near the number of 40: they are built with bamboos, and covered with cajans or grass of the marshes. Here may be seen the remains of the English fort, which was kept only 5 or 6 years, because they found it of no advantage to them.

Among the little islands, one on the side of the great bay is pretty large. They are not so high as the others; and are only steep rocks, covered with moss and shrubs.

The land at the foot of the mountains on the great island, toward the harbour, is but of small extent, uneven, hilly, all covered with trees of an uncommon hardness, close and joined together by long and deep roots, and intermixed with rocks. The soil seems, at first sight, to be blackish and fat; but upon examination it is found to be only sand, fattened at top with the decay of dead trees and leaves that have fallen. At the great bay it is nothing but fine white sand, dry, and of no substance.

This island produces none of the fruits so common in all the other parts of India; here is neither rice nor pulse, only some potatoes, small gourds, water-melons very bad, and certain little black beans, all in small quantities; for, besides the badness of the soil, the excessive rains prevent their production; of this, the manner in which the natives manage their little gardens is a proof. They place a bed, 4 inches thick, of prepared earth, upon a hurdle, about 4 or 5 feet square, supported by 4 props, about a foot and an half from the ground: upon this they sow chibbols, and mint; and every time it rains, they take care to make holes in this bed to let the water soak through gradually; but, notwithstanding all their care, these never come to great perfection.

This island produces many forest-trees, some of which are fit to make masts and yards for ships: there is also a tree that grows very tall and strait, from which the islanders extract a certain reddish rosin, sweet-scented, and very combustible,

combustible, called Dammer : they make one or more holes at the foot of the tree, somewhat like those made in France in the walls for holy water ; and when they want any, they make a fire near the tree, for half a quarter of an hour ; by which means the sap of the tree, being put in motion, distils drop by drop into the hole, or trough, which they take care to empty when filled. The islanders make use of other trees for their proes ; they hollow them out, and raise their edges with planks, joined with ratan (or small cane). The scarcity of pasture is the reason there are no cattle on the great island : there are some fowls, but they are so few their price is exorbitant. The middling island hath oxen and hogs, sprung from those left there by the English ; but from their original tameness they are become wild, wandering promiscuously over hill and dale, yet scarcely find pasture.

The eastern and western monsoons divide the seasons into dry and wet ; the western monsoon bringing rain, the eastern fair weather : but this division of rainy and dry weather is not so equal as that of the monsoons ; for rains continue here above a month after the setting-in of the easterly winds, which is generally about the middle of October : so that the rainy season, which begins in April, lasts 8 months ; during which scarcely a day passes without abundance of rain, which, descending from the mountains in great torrents, destroys and carries away all before it. Besides, the ground, being soaked with rain, casts forth a stinking and offensive vapour, which renders the air very pernicious, rotting every thing within ; so that you can preserve nothing, nor even do any thing without doors.

The dry season brings another inconveniency : the water dries up almost every where ; the ground, which is only sand, becomes dry and barren ; and the heat of the sun is so excessive, that you cannot be exposed to it without danger.

This island has no springs, affording only the rain water, which running down the mountains among the rotten leaves, wherewith the ground is covered, acquires a certain tincture, with an unwholesome quality ; therefore the inhabitants prefer the whitish water of their wells to the clear water from the mountains. Besides, these are drained in the dry season, when they can get none but from wells, which must be dug where the ground will permit ; but these places are not frequent, especially on the harbour side, though it affords some shelter from the heat at this season.

Hunting can be but little used in a country so improper, and whose only game consists in some wild pigeons and a sort of woodcocks. The sea produces here

here but few shells, and fish is seldom eaten, though very good and in plenty; because the islanders but seldom fish in rainy weather, and in dry seasons not at all, for fear of the boisterous winds.

Pulo Condore abounds in reptiles and insects, both troublesome and hurtful. There are also numbers of apes, and monstrous lizards 5 or 6 feet long (which destroy all the poultry) and small ones winged, which fly from tree to tree; others which hiss, whose sting is mortal; snakes of a prodigious size and length; other small ones exceeding venomous; centipeds, scorpions, rats, and in short an infinite variety of insects, bred by the excessive heat: but the ants are the most troublesome of all; they get into every thing, and spoil whatever they come at.

The inhabitants of this island amount to about 200, including women and children. They are fugitives from Cambodia and Cochinchina, whom the love of liberty and independency hath brought to this country. Hitherto they have enjoyed it peaceably, as envy hath not yet excited in their neighbours, or the Europeans, a desire to molest them in their possessions. These people have neither a healthy nor strong look: they are short, lean, very swarthy, industrious just enough to supply their wants; but exceeding slothful, covetous, and selfish, yet extremely poor. As this country is incapable of supplying their necessities in a sufficient manner, they fetch from Cambodia and Cochinchina what is requisite for their subsistence and cloathing: in exchange they carry thither oil, tortoise shell, a pickle made of a small fish like an anchovy, and flambeaux made of the bark of trees, torn in slips, and dipped in the rosin or dammer before-mentioned, which they bind in a case of the leaves of a wild plant, common enough in this island.

The English settled here in the year 1702, when the factory of Chusan, on the Coast of China, was broke up. They brought with them some Macassar soldiers, who were hired to assist in building a fort, and to be discharged at the end of 3 years; but the chief not fulfilling his engagement with them, they waited an opportunity, and one night murdered all the English in the fort. Those without the fort hearing a noise, took the alarm and run to their boats, very narrowly escaping with their lives (but not without much fatigue, hunger, and thirst), to the Johore dominions, where they were treated with humanity. Some of these afterward went to form the settlement at Benjar-Masien, on the island Borneo.

CCXCIV. DIRECTIONS for SAILING, in the WESTERLY MONSOONS, from SIAM to the River of CAMBODIA, TONQUIN and CHINA, to the Westward of the PARACELS, along the COAST of CAMBODIA, TSIOMPA, and COCHIN-CHINA.

Sailing from Siam Bar, in the months of June, July, and August, you stand toward the west coast of the gulf, and keep along it as far as Cin Point; from thence steer SE. till in the latitude of Pulo Panjang, then east, to get a sight of it. This last course is not always necessary, as the currents, which run to the eastward, often set you in sight of Pulo Way and Pulo Panjang sooner than you are aware of therefore proper precautions must be used. You have 30 fathoms just within sight of this island (Pulo Panjang) which decreases as you come near it. But observe, that this depth is likewise found in many other parts of the gulf, out of sight of the land.

As soon as you have passed Pulo Panjang, the course is SEbE. 23 or 24 leagues to Pulo Uby, situate exactly at the eastern extremity of the Gulf of Siam, in latitude $8^{\circ} 34' N$. Its height renders it perceptible at a great distance; it is overspread with various mountains and valleys, or hollows like saddles. Coming from the SW. or westward, these hills bearing NE. appear separate, (the southernmost is much higher than the rest, and the northernmost seems lowest); but when Pulo Uby bears north, they are in one. You may get fresh water on the north side of this island; but the best ~~4~~age is on the east side, opposite a little bay; the little island at the SE point bearing south.

Between Pulo Panjang and Pulo Uby, you have 25, 20, 18 and 16 fathoms; when you get into this last depth, you are near Pulo Uby.

Coming from the westward, when you have 28 or 25 fathoms, you are a good way from it.

It is necessary, that the ships from Batavia, Bantam, or Malacca, to the river of Cambodia, as well as from Siam, should make Pulo Uby, that they may be far enough to windward to make advantage of the SW. winds, which blow very strong in the months above mentioned; then the currents also set so strong to the eastward, that if you fall to leeward, it will be exceeding difficult to regain the coast. It is reckoned 40 leagues $E\frac{1}{2}N$. from Pulo Uby to Pulo Condore, given in the preceding section.

If you are bound to Cambodia; after doubling Pulo Uby, in 15 or 16 fathoms, stand to the northward, to make the continent; and when the southernmost point of the continent (which is low and covered with large trees) bears

bears NW. then steer EbN. and ENE. keeping in the depth of 8 or 10 fathoms mud. About 5 leagues off shore, there is a bank of sand, with no less than 3 fathoms: this need not hinder you from continuing your course to the northward (allowing it a birth if in a large ship) as you soon after meet with better soundings, in 5 or 6 fathoms; and you may near the land as far as 4 fathoms, till opposite a river, whose banks are planted with trees, higher than on any other part of the coast. This river bears WSW. 22 or 23 leagues from that of Cambodia. From thence, steering NNE. in the above-mentioned depth, you will see the mouth of another river, from whence the coast extends eastward, as far as that of Cambodia.

This coast is extremely low, and without any particular mark; therefore you must keep near it, to observe its bearing; and as soon as you find it vary from east, you may be sure you are off Cambodia River, at the entrance of which you have 5 fathoms. Then you may see two points, and an island in the middle of the channel, and before its mouth two banks, which, with the island, forms a triple passage: the western one is called the River of Basach (or Cassaba); the second, between the two banks, has 14 or 15 feet water, hard sand; and the eastern channel, 18 feet in the height of the springs. To go between the two banks, you steer north and NbW. in order to keep the west point on board, near which there are 34 and 36 fathoms, where you may see two little islands, which you must leave on the starboard, to coast the western shore, for the space of 48 leagues. Thirty leagues above its mouth, the river divides into two branches, one of which is a narrow passage, called Moultique Passage, which you leave to the larboard, and sail through that on the starboard keeping always on the west side, 'till you front the town.

The ships which sail up this river must be well provided with cables, \rightarrow s, and hawsers, because they must warp above 50 leagues of the way. Still it requires the conduct of a skilful pilot, as absolutely necessary to enter it with safety, on account of the annual shiftings of the banks which happen in this river.

The River of Cambodia has many other mouths to the northward; beyond the above-mentioned, the coast runs rounding to the NE. as far as a narrow entrance, called the Easter Channel; then it trenches NbW. as far as the Japonese Channel, off which lies a little island called Crab Island.

NNE. of this last, in latitude $10^{\circ} 35' N.$ is Cape St. James, or Sinkel-Jacques; this is an high broken land, which may be seen 10 or 11 leagues at sea; and notwithstanding some rocks or islands near it, it may be coasted as close

close as you desire, in 5 or 6 fathoms. The coast beyond it is low, extending NEbE. and forms several sandy bays, with two points, on which are some downs of sand, the land here making in hillocks.

To the northward of the second sandy point there is a great bay, on the east side whereof is a small island of a moderate height, called Cow Island.

Three leagues off this coast, in latitude $10^{\circ} 50' N.$ lies a dangerous shoal, upon which a Portuguese captain, named Matthew de Brito, was shipwrecked; it may be seen a quarter of a league off, in 14 fathoms, gravel and shells. To avoid this danger, you must come no nearer this land than 4 leagues, opposite to three little white hills, by the sea side. The mark to know this shoal by, is a single mountain, highest at the east end, and much lower at the west end, which is peaked, at the foot whereof appears Cow Island, like a little round hillock. When the highest part of this mountain and the hillock appear in one, bearing NbW. the Brito shoal is in the same direction.

To avoid this danger with the greatest certainty, you must keep in 16 or 17 fathoms; this will carry you far enough without it.

Ships not bound for the River Cambodia, but only to Tonquin or China, are not obliged to make Pulo Uby, nor to approach the coast about the mouths of that river; the foregoing instructions concern those only who are bound directly thither. It is sufficient for others to see Pulo Condore; and from thence, whether passing on the west or east side, stand for Cape St. James, and sail along the Coast of Tfiompa, observing the following directions to avoid the rocks which lie off it.

From Pulo Condore, toward this coast, you have soundings in 20, 25, 16 and 15 fathoms.

About 23 or 24 leagues NE. of Pulo Condore, and 12 leagues from Crab Island, you meet with a bank, of 13 fathoms water, discovered by a Dutch sloop.

Seven leagues NEbE. of Matthew de Brito's reef, you see Tiger's Island, or, as it is called by the Dutch, Steen-Clippen; it is very near a great sandy point on the Coast of Tfiompa. Coming from the northward, this point makes likes an island, upon which are several white spots; but the island above-mentioned being barren and rocky, makes it easily distinguished from any other point. The channel between them is not navigable, on account of the sand, banks and rocks with which it abounds. These rocks yield a striking representation of a city in ruins, with a square steeple in the middle of it.

The coast between Cow and Tiger Islands forms a great bay, or bight, into which several rivers empty themselves.

Here it was that the *Galathea* frigate, belonging to the French company, landed in 1720. It was commanded by M. Le Gac, who was obliged to enter this bay, in hopes of finding water and refreshments. He sent his boat ashore, with two officers, to ask permission of the inhabitants to get some fresh water, and cheapen provisions. On approaching the shore, they were met by a great number of people, offering to do them service; and they sent a pirogue to conduct them to the entrance of a fine fresh-water river, in which were many boats and small galleys. This was the only part of the coast where they could easily land. Another croud of inhabitants presented themselves here, who made a sign for them to come on shore; the two officers accordingly landed, having first ordered the cockswain and crew to wait for orders, before they came farther up the river.

The chief of the inhabitants conducted the officers to a village, upon the banks of this river. About an hour after, a great number of the natives came, and by signs demanded the boat's crew to deliver up their arms, which the cockswain refused; and perceiving one of their principal men shew the people (with acclamations of joy) the swords of the two officers, which he had taken into his possession, and fearing he should be attacked unawares, he was about to return on board the ship, to report what had happened; when immediately two large boats, armed, went out of the river to intercept his passage; but he had the good fortune to escape them.

Upon this information, M. Le Gac resolved to man his boats, and oblige these people to restore his two officers. Just as they began to put their design in execution, they saw two country boats, but they would not come within gun-shot; the two officers appearing, the boat was dispatched to speak with them; but they were no sooner within hearing, than the officers called out to forbid them to land, desiring them to conceal their arms; because upon the least stir they should make, these people threatened to stab them. In fact, they were bound, and had each standing by him, an Indian with a naked creise (or poniard) in his hand. They said, that as soon as they landed they were plundered, and after a deal of ill usage, they had made them pass the night in the sept, or pillory. After this relation, the country boats returned to shore.

The next day they appeared again, and said, that the king of the country, who had been acquainted with the arrival of the ship, would send a missionary

to get intelligence from whence it came. Two days after, the *Sieur Gouge*, a native of France, born in Picardy, and a missionary, came from the king. He came first into this country in the squadron of *M. de Chaumont*, in 1685. and had lived there ever since. This good ecclesiastic deserves a particular commendation; his ardent zeal to serve the two prisoners, and the danger he underwent in exposing himself thereby to the resentment of the natives of this country, distinguish his character as a good man, and worthy of his function.

The day following, the king's son arrived at the village, who being informed of the ill usage shewn to the two officers, came to know the truth thereof; he accordingly heard their complaints, and promised to do them justice; but required that the captain of the ship, or his second, should come ashore. They thought it improper to refuse his request; therefore *M. Gravé de le Belliere*, second captain, went to him. The prince received him honourably, and told him that the king, his father, had sent him to inform himself of the insults the strangers had received, and to make them a suitable reparation. He afterward caused them all to be conducted to the house of a mandarin, where a dinner was prepared for them, which was followed by a comedy, in the country taste.

The play ended, the officers were conducted to the audience of the prince, and to be present at the punishment of the criminals. They were led in with the sept about their necks, and caused to sit with their backs to him, as unworthy to face him. After a most severe reprimand for their ill behaviour, he sentenced them to be fined 50,000 cashes, or cash amounting to £.3, 15s. sterling, and to receive each 50 stripes with a bamboo on their breech.

After this execution, *M. Gravé* had leave to return, on condition, however, of coming again the next day: when they promised to restore the two officers, and to give them the refreshments they came to seek; they also permitted the boat to take in fresh water.

M. Gravé did not think it proper to refuse what was required of him, but went on board, and returned the next day to the prince, who received him very graciously, and invited him and the two officers to dine with him: after the repast, they had another comedy, which was interrupted by a madoye, or courier, from the king, bringing a letter addressed to the prince, expressing, that his Majesty's pleasure was, that the ship should weigh \rightarrow from the road it was then in, and go in a better port, in a great river, 8 or 9 leagues further;

and that being desirous of seeing the officers, he required that they should be brought by land to Feneria, where he resided.

This letter served the prince for an excuse from keeping the promise he had made them the day before. They could even scarcely obtain his permission for one of the officers to go on board of the ship, to acquaint the captain with the king's new orders: this, however, was granted, but on condition, that the person who went should return the same day; and that they might not suspect the sincerity of his professions, he sent two buffaloes, some hogs, and other refreshments.

It is easy to perceive, by the first request, that they had a mind to seize the ship, by wanting to have it in a place from whence it could not easily get away; but M. Le Gac was too prudent to be caught in this snare; he excused himself, under pretence of contrary winds, and other inconveniencies which he represented. Without informing the ship's company of this, he waited to see what they would be at; but resolved not to forsake the two officers till the last extremity, who had sacrificed their safety to the common cause.

These, however, could not so easily elude their journey to Feneria. They were obliged to set out, and underwent incredible fatigue; but the want of food, the excessive bad roads; and the inconveniencies of a sultry climate; were not so intolerable as the cruelty and insolence of their guides. These wretches used them so barbarously, that they were frequently obliged to complain to the prince, who went along with them.

After 9 days march, they at last arrived at Feneria. They were longer going than was necessary, being delayed on divers pretences. They were frequently conducted out of the right road, and then forced to return; they led them also to the shore, to communicate several orders, or give intelligence on board of ship.

On their arrival, they went to the house of the missionary, who spared no pains to accommodate them, and procure them all the help that was in his power, even depriving himself of his own subsistence. Several Christians in that country came down to visit them, and brought them provisions while they continued there.

The next day the king sent an officer to tell them he desired to see them; they went accordingly, accompanied by the missionary, and passed on horseback over a narrow river, but 10 feet deep. They found on the other side a numerous throng, whom curiosity to see them had brought thither. From thence they

they were conducted to the audience chamber. This building had nothing extraordinary pleasing to the eye; it had neither grandeur of architecture, nor was it richly ornamented; it was only an open hall, consisting of two large edifices, without partition, supported by plain pillars of red wood.

The throne whereon the king was placed, had none of the splendor and magnificence of the Eastern Kings, of which many travellers have given such pompous descriptions. This was a plain foot-stool, raised and covered with a carpet; behind it was a china varnished screen. The king's dress consisted in a gown of black damask, laced with gold, intermixed with mother-of-pearl, and clasped, and over it a shawl of very fine callico, edged with a gold fringe, upon a narrow gold trimming. His crown was of scarlet cloth, without jewels, and only bordered with a narrow gold lace of Japan. He had also little buskins on, which none in the kingdom, besides himself, were permitted to wear.

His body-guard was composed of 12 men, clothed in red silk, with a turban of the same colour, each of which held a sabre, whose hilt was gilt with gold. At his left hand were four mandarin loyes, dressed like the king, except the buskins, who had also guards. At his right hand stood a mandarin of Cochin-china, with several other mandarins, and about 200 officers, all placed according to their stations.

They placed the strangers and the missionary at the entrance of the hall. The king, after viewing them some time, caused betel (a leaf which is chewed in the Indies, somewhat like our tobacco) to be presented to them, and ordered those about him to say he was overjoyed to see the French, and glad of the opportunity to oblige the subjects of a king, whose grandeur, power, and renown, extended to his dominions. Their answer, full of acknowledgements for his goodness, was interpreted to the king; he expressed his satisfaction, by bowing his head, and withdrew with his attendants.

Soon after, they were introduced to the dining-room, where the king and his court were already set at table. The French had one prepared for them, served up with the four quarters of a hog, two boiled and two roasted, some fowls, and other meats in the country manner. This first service was succeeded by the white parts of fowls, minced with some sweet-meats. The king ordered them some of his own drink, which they found good; after which they were presented with a comedy.

At the end of the performance, one of the principal mandarins sent to M. Gravé to demand of him 30 *necunes*, which make 420 Spanish piastres (amounting

(amounting to £.94, 10s. sterling); he alledged that this sum was to supply the ship with refreshments, and that it was the custom of that place to pay beforehand. Upon a remonstrance that this sum was exorbitant, he reduced it to 5 necunes, or 70 piaftres : but M. Gravé saying he was not in a condition to satisfy him, they permitted him to send an officer on board the ship to fetch the money. In the interim, the king ordered them to ask him if he had a mind to see his palace, which was but a quarter of a league off; he thanked him for the honour of his offer, and withdrew with the rest.

During these feigned courtesies, the mandarins held a council, wherein it was resolved to send to Cambodia for a mandarin skilled in military affairs, to whom should be given the command of several galleys, which they designed to arm, to seize the ship. For this purpose they caused several troops to march along the coast, who should be ready (at a proper place) to embark for this expedition. Happily some Christians made a discovery of this plot to the missionary, who communicated it to M. Gravé, and the captain of the ship, on board which the missionary had orders to accompany the officer, who was gone to fetch the 70 piaftres they had agreed for. M. le Gac, upon this advice, was at a loss what measures to pursue; he first thought of weighing \leftrightarrow , but was very loth to leave his officers behind; besides, a sudden departure would be of dangerous consequence to the *Sieur Gouge* and the other officers. The missionary represented that they were liable to be striped of every thing; that even he himself would not be spared, on supposition of his being accessary to their escape; that then, forsaken and wandering about the country, they would not only be oppressed with misery, but the malicious and unmerciful populace would practise a thousand barbarities upon them, as happened to the crew of a Dutch ship that was lost on the coast; nor would their misfortunes have the least effect upon this cruel people.

It may be easily imagined what terror this discourse had on the people, who were now under the same apprehensions. Upon the return of the *Sieur Gouge* and the officer, M. Gravé and his companions made new efforts to regain their liberty. They sought the prince, with a view of making strong remonstrances to him on the manner of their proceeding, with respect to themselves, contrary to honour and the law of nations. The missionary did not accompany them this time, judging it more prudent to wait 'till he was sent for; it happened as he had wished.

The prince (who could not understand what they said to him) sent for the *Sieur Gouge*, who made a pathetic speech in support of their arguments; he
answered

answered, that the manner in which he had acted with respect to them, was the result of a consultation between the king, the mandarins, and himself; that, notwithstanding their interests were dear to him, he desired to be excused from seeing them again, because he was unwilling to incur the displeasure of the mandarins of the council; he received them with great freedom, caused them to eat and drink with him, and was so gallant as to offer them women; but, under the anxiety they laboured, the most seducing charms could have no relish, nor excite in them an inclination to lewdness.

The same day, toward evening, the missionary received an order from the chief mandarin, to go on board of the ship, as from him, to require the 30 necunes, or 420 piaftres, according to their first demand, and to command the captain to sail with his crew a league above the mouth of Baria river. These orders were very resolutely given, therefore M. Gruvé and the two officers sent a letter by him for M. Le Gac, acquainting him therein, that, despairing of ever escaping out of the hands of these barbarians, they desired he would sail as soon as he pleased, and that they were resigned to suffer all the hardships of their captivity. M. Le Gac (moved with extreme sorrow) desired the Sieur Gouge to propose to the mandarins the ransom of his officers for the sum they required; that he would leave them four days to consider of it, but at the expiration of that time he would sail.

This proposal was accordingly made to the mandarin; he came immediately to the village, off which the ship lay, to consult with the other mandarins; and at the same time caused the Sieur Gouge, M. Gruvé, and the two officers to come thither also; buoying up the three last with hopes of being sent from thence on board of their own ship: but the missionary learned (by Christians well informed), that the mandarin came to this village to give orders to attack the ship (which he thought well laden with treasure); that his intention was to put the priest and the three officers each in a separate galley, that, if the ship should make the least resistance, or any of his people should be killed, he might have an opportunity of sacrificing them to his revenge. Such was the situation of these poor officers, who seemed to have no other visible end to their calamities but certain death.

They set out accordingly, after recommending themselves to God; and lay the same day within a league of the village where this enterprize was hatching. They found the prince there, whom they saluted, and whose protection they implored; he assured them he would assist at the council, and espouse their cause there, and endeavour to prevent the designs of the mandarins. M. Gruvé
made

made him a present of his sword, imagining he had a mind to it ; the prince accepted the gift, but desired him not to mention it to the mandarins, because he had measures to take with them.

The next day in the morning, a report of one of the ship's guns was heard ; the council ordered M. Gravé to be asked the meaning of this ; he answered, that it was a signal for sailing. Upon this the mandarins entered into a conference with them, when (after many debates on both sides) they agreed to what the zealous missionary had proposed a little warmly, even at the hazard of his own life ; that the 3 officers should embark in a boat with 8 rowers, and that he himself should accompany them on board their ship, to receive the 420 piaftres, by way of ransom. They caused also another boat to go with them under pretence of convoy, with 10 or 12 men, armed with sabres and spears, which followed the first. They arrived near the ship at 7 o'clock in the evening, when the ship's boat put off to receive them. They returned the priest a thousand thanks for the care he had employed in such a troublesome affair, and for the happy success of his negociation ; accordingly counted out to him the 420 piaftres, and he returned a-shore.

The morning following, the *Sieur Gouge* came back to the ship with a message from the mandarins, to desire them to send a boat to fetch some buffaloes, hogs, fowls, and other refreshments, which they offered them. *M. Le Gac* answered, that he would receive them if they thought proper to send them in a boat of their own ; but for his part he was not in a humour to trust again to their caprice, either his boat, or any of his men. The missionary commended his answer ; and having received repeated marks of his friendship, he took his leave. The ship directly set sail for *Pulo Condore*, where it was ordered to touch before it went to China. The detainer of the officers had prolonged them 30 days on the Coast of *Tfiompa*.

(In the Arabian Gulf, the *Severn*, Captain *Collier*, 1745, met with much the same treatment, and at last was forced to pay upward of 500 dollars to the Sultan for what he called *page* duty, before he got released ; besides his detaining a chest of treasure for escorting 4 others through his dominions to those of *Mocha*, in the Red Sea ; which, to give him his due, was pretty honest, considering he had all 5 in his power ; though, in fact, the 500 dollars were paid for this very consideration).

This relation is inserted here, in order to give an idea of the character of the inhabitants of this coast. Those who have hitherto imagined they might establish

establish advantageous settlements here, have been unacquainted, or greatly misinformed of the temper of these people; and the ships that approach this place may hence be advised to take proper methods to avoid putting in here. M. Gravé, who sent the company this relation, whereof this is but an extract hath described therein the lives and manners of the natives, so far as he had time to inform himself thereof during his stay there. Perhaps it may not be disagreeable to recount what he says of them.

The Cochinchinese and Loyes are two distinct people. The former came out of China at the time of its conquest by the Tartars, and resemble the Chinese in their features, their beards, and their dress, excepting that they do not cut off their hair, which the modern Chinese, living under the Tartar government, are obliged to do; and at Batavia they pay a tax of a dollar per month for the indulgence. They wear in their ceremonies a long black gown, like our lawyers. They value themselves much above other nations, and think themselves more learned and ingenious, though they have a very shallow capacity, since they are absolutely ignorant of trade, or even husbandry, and consequently very poor. Their strength only consists in some galleys, each armed with only 40 or 45 men, two small cannon, with muskets, pikes, sabres, and bayonets, which they use very skilfully. Their officers wear a robe of black silk, open at the sides, with a horse-hair cap in the form of a sugar-loaf, and a tail behind. The soldiers have their sleeves something less; and their cap is of a buffalo's hide, like a helmet, which is said to be sabre-proof.

The Loyes are natives of the kingdom of Tsiompa, who maintained a long war against the Cochinchinese; but are at length become tributary, by a treaty of peace concluded between them, about the beginning of this century. The conditions were, that the king of Tsiompa should possess his dominions in tranquillity, but that he should pay homage to the king of Cochinchina; a mandarin of which kingdom was to hold the second place at the royal council of Tsiompa, where nothing could be decided without his consent.

The Loyes are large, nervous, and better made than the Cochinchinese. They are of a reddish complexion; their nose is flattish; they have long and black hair, little whiskers, and a small beard upon their chin. Their dress is a long frock and a pair of callico drawers, over which they wear a white garment in form of a petticoat, with a gold and silk fringe, according to the circumstances of the person. The king's guard and mandarins are clothed differently from those of Cochinchinese, instead of the black robe, a white cabaye, with a turban; the officers wear them a little longer than the soldiers.

The character of these people is very different from that of the others: these are more humane and more affable to strangers, more laborious, and richer, though not so strong by land as the Cochinchinese, whose number is greater; yet by sea the Loyes have the advantage, their galleys being better built. Their boats are in form of tartanes, and serve them for fishing, whereof they catch great quantities.

There are among them a cast, or sect, called Moyes, which inhabit the mountains, and are employed at hard labour, like slaves, and wear only a small piece of linen to cover their nakedness.

Both nations have nearly the same laws. They observe great decorum, from the king's mandarins, and those in office, to the lowest class of people; but though policy and law are cried up here, equity and right are excluded. They are punished for the least offence. The common people cannot keep their money to themselves; those on whom any is found are condemned, by the mandarin of the place, to be fined, or receive a severe bastinado. Their money is copper, of the bigness of a French liard, and is called cash; 100 of them go to an amarade, which is valued at 30 French sols, or 4*d.* $\frac{1}{2}$ sterling. The office of mandarin is granted to him who presents the greatest sum to the king, and the larger the sum the greater the dignity he has bestowed upon him: but in this they differ, that the Loye mandarins (where they are not rich enough to satisfy their exactions) have alone the privilege of borrowing money, on great interest, of the king's wives, who esteem this method of commerce, it being all their revenue; whence each of these chiefs gets the most he can in his district, and the subjects are never the better for it.

Religion is free in this country, as in China; those that prevail most are Mahometanism, and the laws of Confucius. Idolatry is likewise practised here; some worshipping animals, others the sun, the moon, and the stars, or the firmament. One thing extraordinary is, that the Mahometans eat pork, and prostitute their wives, except their lawful or first wife, whom they cannot put away without having detected her of adultery. The marriages are performed without ceremony, and with very little trouble; the consent of the parties is sufficient; and after it is over, they chew betel together. In general they live on nothing but rice and dried fish, and even that half rotten; but they drink a great deal of parjar arrack, and are frequently drunk.

The southern parts of this country produce a little cotton, indigo, and bad silk; so that the inhabitants have no trade but among themselves, of which fishing makes the most considerable part.

On the north coast, the Chinese send several ships yearly, laden with tea, the worst sort of silk, china-ware, and other commodities of the country; they take in exchange gold, which is of greater esteem than that of China; they prize also a sweet-scented sort of wood, which grows upon this coast, to burn on the tombs of their relations, and to honour their pousas and images. This commerce was interrupted about 25 years ago, by the ill behaviour of these people to the Chinese, whose ships they plundered and burnt, and refused to make them reparation. From that time they have been cautious of trading thither; and the Loyes have imposed new laws of $\frac{1}{2}$ age, which must be paid before they can traffic; likewise their mandarins, on pretence of measuring the ships, rummage the officers cabins, &c. and take away what they think proper. These impositions are too flagrant to think of carrying on any trade with them; for if they use their neighbours in this manner, what are Europeans to expect? a people wholly unknown to them, and whom they never see, except by chance.

CCXCV. DIRECTIONS concerning the ISLANDS lying off the COAST of TSIOMPA.

Forty-seven miles SE. of Tiger Island, in latitude $10^{\circ} 32' N.$ lies Pulo Cecir, surnamed de Mer, or of the sea, to distinguish it from the other Cecir near shore, and 8 leagues distant from the said Tiger Island. Cecir de Mer lies NE. and SW. about 2 leagues in length; the land is dry and barren, of a yellowish colour; the middle rises in a mountain, and to the southward of it are several hillocks. About three quarters of a league from the NW. point there is a large rock, and within gun-shot of the NE. point a little island, whose soil is reddish. It is surrounded with rocks, both above and under water; and a sand-bank reaches from these rocks to the little island. The 17th of January, 1738, Mr. Herbert, in the ship Prince de Conti, after observing in latitude $10^{\circ} 58' N.$ and steering a league and a half SW. saw the Coast of Tsiompa bearing NW. and afterwards Pulo Cecir de Mer SSW. Having seen these lands, the night prevented them from passing the bank of the Court of Holland: they therefore stood off and on with an easy sail all night, waiting for day-light to pass the danger; sounded 38 fathoms, grey sand, and steering about NW. at midnight, sounded 25 fathoms, rocky ground, and $\frac{1}{2}$ ed, fearing the currents might drive them upon the shoal. At day-break they were upon its north edge, from whence Pulo Cecir de Mer bore SE. 7 or 8 leagues distance. Weighing from

this place, they neared the Continent, within 4 leagues, and afterward steered toward Pulo Condore.

Half way between Tiger Island and Pulo Cecir de Mer, lies the bank of the Court of Holland, whose shoalest part, according to report, hath but 4 fathoms water. The ship Prince de Conti ~~had~~ ^{was} close to it in 25 fathoms, small stones; from thence, having seen and stood toward Pulo Cecir de Mer, found that the north part thereof bears NNW. off this island. Ships from the northward or southward may avoid this bank, by sailing along Pulo Cecir de Mer, at 2 leagues distance, and in a fine channel, like that between this bank and the Coast of Tfiompa, where you have 23 or 24 fathoms, sand mixed with small stones. This bank, it is judged, might be of use, if it was surveyed and found free from dangers.

ENE. of Pulo Cecir de Mer, distance 17 leagues, there is an island, with two lesser ones, which some navigators call the Three Brothers. It is of a middling height, and from the south point thereof projects a reef.

(The ship L'Argonaute, in 1730, returning from China, made the northernmost island, bearing from NW. to WbN. distance about 5 leagues. It appeared (especially in the middle) of a height that might be seen 10 leagues at sea. He observed, at the same time, in latitude $11^{\circ} 5' N$. from which it may be concluded, that this island lies in latitude $11^{\circ} 10' N$. From hence he steered first SW. then SWbS. and at a quarter after 4 o'clock, saw the other island bearing WSW. distance 5 leagues; and at three quarters after 5, it bore from W $\frac{1}{2}$ S. to WSW $\frac{1}{2}$ W. 3 or 4 leagues. This last appeared low, even, and had on its north point two hills, which he took for islands at a distance.

By working the ship's run, this island lies SW. of the former, distance above 15 or 16 leagues; this journal makes no mention of the foul ground between these islands. By their run from these toward Pulo Condore, it is evident that these islands are the same, which are commonly called Rabo de Lacra.

NE. 15 leagues from this last, in latitude $11^{\circ} 10' N$. there is a small island, a little higher. All the old charts draw from one to the other a dotted line, to represent the ridge of a bank, which seems to indicate that the bottom between these two islands is dangerous. The Portuguese call this bank and the islands Rabo de Lacra, or the Scorpion's Tail.

Ten leagues south of the Three Brothers are two other little islands, and a great rock above water, which the English call John Catwicks, and the Portuguese Pulo Sapata, from a resemblance the easternmost island has thereto, at certain bearings. The bearings and distances of the Three Brothers with Pulo Sapata,

DIRECTIONS concerning the ISLANDS lying off the COAST of TSIOMPA. 381

Sapata, were taken by the Sieur Bern, in a voyage to Manilla, 1724. He saw Pulo Sapata, passed to the westward of the little island, situate WNW. of that in the shape of a shoe, and when it bore south, about 2 leagues, he saw the Three Brothers bearing NNE. upon which he stood toward them. It lies in latitude $9^{\circ} 58' N$. Almost all the ships bound to China, the Philippines, or Japan, after Pulo Condore, endeavour to make Pulo Sapata, to shape their course with greater certainty; and avoid the rock of Andrade, which most navigators place at the distance of 18 leagues EbN. from Pulo Sapata.

SSE. of Pulo Sapata lies the bank of Mildeburg or Middlebourg; it extends only a quarter of a league in length, from E. to W. according to the journal of a navigator who saw it returning from Manilla; he saw the sea break there, and found 7 fathoms water on its westernmost point.

The Paracels is a great rocky bank, extending from N. to S. off the Coast of Cochinchina, according to most charts, 92 leagues in length, from latitude $12^{\circ} 10' N$. to latitude $16^{\circ} 45' N$. and 20 leagues in breadth. We have been informed, within these few years, that this space is filled with several islands of different sizes, with sand banks and rocks in many parts of it.

CCXCVI. DIRECTIONS concerning the COASTS of TSIOMPA and COCHIN-CHINA.

Eight leagues ENE. of Tiger Island lies Pulo Cecir de Terre, about 5 miles off the high Cape Cecir: it is low barren land, and surrounded with rocks both above and under water.

Between Tiger Island and Pulo Cecir de Terre there is a large bay, which extends NNE. about $4\frac{1}{2}$ leagues, as far as Boden River. This would be a good place for refreshments, if the people were of a more social disposition. At the south-west point of this bay, and about 5 miles to the northward of Sandy Point, there is fresh water.

When Cecir Bay bears WbN $\frac{1}{2}$ N. 6 or 7 leagues, you may see to the northward, two or three little hills, like sugar loaves, and on the south side a long ledge of sand, which reaches, as it were, along the coast to the Sandy Point; these marks make this bay easily known from the others.

Near Cape Cecir there is a dangerous reef, called Breda's Shoal, projecting out from Pulo Cecir de Terre. To avoid it, you must pass 3 leagues without this island; for nearer the water shoals, and the bottom grows foul.

Between the bank of the Court of Holland and that of Matthew de Brito, you have 20 and 22 fathoms, at $4\frac{1}{2}$ leagues off shore. If thence you stir
NE.

NE. and NEbN. you have but 15 and 12 fathoms, sand mixed with small stones; then Tiger Island bears NW. If the course be continued, the depth increases again to 18 fathoms off Cecir Bay, and gradually to 24 about 3 leagues off Pulo Cecir de Terre; sometimes sand, and sometimes stony foundings.

If you sail $1\frac{1}{2}$ league off shore, within the bank of Matthew de Brito, you have 9 and 10 fathoms, as far as Tiger Island; and from thence to Pulo Cecir it deepens presently from 10 to 14 and 15 fathoms; then it shoals again (if you continue to sail along shore) to 10, 9, and 8 fathoms; and within Cecir Bay, to 6 fathoms.

Padaran Bay lies in latitude $11^{\circ} 25' N.$ about 10 or 11 leagues to the north-eastward of Pulo Cecir de Terre; and further on, in latitude $11^{\circ} 47' N.$ is the False Cape Varella, or Avarillo: it is high, with a rock at the top of it, like a centry-box. The Portuguese gave it this name, to distinguish it from another to the northward, very much alike. Close by the high land there is a long valley of sand.

Between Padaran Bay and the False Varella, there is a bay extending NbW. whose bottom is exceeding foul; and at its mouth there is an island equally encompassed with danger.

The entrance of Comorin Bay is to the northward of the False Cape Varella, and extends NWbW. Going in you find 40, 35, and 30 fathoms. The NW. side is very rocky and full of shoals; and the adjacent lands appear double, with many points and bays.

About 9 leagues from the False Cape Varella lies the south point of Weslien's Bay: it is known by whitish spots upon the land to the southward thereof; also by several islands near it, whereof Fisher's Isle is the most remarkable; it lies very near the north point of the bay, and seems very barren. Near this bay you perceive, to the westward, a hill, which in clear weather resembles Cape Varella; but it lies more southerly, and generally is obscured by the clouds.

Pagoda Bay lies a little to the northward of Fisher's Island, as do those of St. Philip, or Sir John Phipps's Bay, and Scutins, or Schuyten Bay, which seem barren. Hereabout the land is of a moderate height and steep; but up in the country the land is higher. Between this bay and Cape Varella, you may see, on the land, several downs of white sand.

The

The True Cape Varella (named thus by the Portuguese) is situate in latitude $13^{\circ} 7'$ or $8'N$. and is known by a high hill, on the top whereof is a rock, like a pyramid, or tower, which may be seen at a great distance, either from the northward or the southward; beyond which the coast forms a bight, or great bay, whose whole extent is not visible till you are past the cape: it is said that its bottom is good and safe, in 15 fathoms, and that you may take in fresh water there; but you must be greatly on your guard, on account of the inhabitants, who are all thieves, and treacherous.

Nine leagues to the northward of Cape Varella, you meet with Pulo Cambir de Terre, which is a long and low island, about $1\frac{1}{2}$ league from the main, and is known by the spots of different colours of its soil. To the southward thereof is a rock, on the top of which are four great stones standing upright, which seem to have been placed with great order and exactness. You may \rightarrow in 12 fathoms, sand, between the continent and the island, and take in fresh water out of a great river, which empties itself near Pulo Cambir. The coast hereabout trenches a little more to the westward.

Coming from the northward, as you near Pulo Cambir, you will see a hill like that on Cape Varella; but that is further, and different in this, that when it bears SWbW $\frac{1}{2}$ W. you may see another little hillock to the northward thereof.

ENE. 15 leagues off Pulo Cambir de Terre, upon the edge of the Paracels, lies a little island, called Pulo Cambir de Mer.

Chinchen Bay, whose north point is situate in latitude $13^{\circ} 52'N$. is very extensive: it is known by a great rock, which rises like a steeple out of the water, and by several hummocks a little to the northward, resembling islands. When you have the bay open, and it bears west, about 3 leagues distance, you may see there two rocks, the southernmost of which is divided into three, by which it may be easily known.

To the northward of Chinchen Bay, you find the entrance of a larger river, beyond which the coast extends NNW. and forms a bay full of islands and rocks. On the north side are several downs of sand, which may be seen a great way off at sea.

Pulo Canton, Cantoan, or Cantin, is in latitude $15^{\circ} 40'N$. about 10 miles from the Continent; it is about 3 leagues long, being high at each end, and low in the middle, which makes it mistaken, at a distance, for two islands. From the south-east part there runs out a reef, the length of a long cannon-shot,

on

on which the sea breaks. Many dangers surround this island; the bottom is foul, and therefore ships should not approach it too near.

You may sail between the continent, or Cape Bethang and Pulo Canton, in good soundings of 30 or 40 fathoms. To the southward of Cape Bethang, there are several rocks both above and under water; but keeping in the above depth, you have nothing to fear.

On Pulo Canton there is fresh water, but the difficulty is to land there; whereas on the Continent, opposite the island, there is a spacious river, with 5 or 6 fathoms water. Salan-Buigh, a town situate on its south point, may be seen 12 or 13 leagues. This coast and the parts adjacent, are very populous.

Two leagues NNW. of Pulo Canton, there is a small flat island, whose coast is very foul; but there is a good passage between these islands and the main.

NWbN. about 16 leagues along shore, lies Campella or Camponella Island, in latitude $16^{\circ} 25' N$. It is pretty large and high, extending NNW. and SSE. upon it are two high mountains (the southernmost is the highest) and in the middle a valley full of trees. You may get fresh water on the western coast, next the continent (from which this island is about 2 leagues distance); there you may \leftrightarrow in small bays, very convenient for that purpose. The shore, on the Continent, is low and sandy. At the NW. point of the island are three little islands, one of which is very high, and at the SE. point is another less.

SE about 3 leagues, there is another middling island, called the False Campella, from the SE. end whereof projects a reef. To the westward of Campella Island, upon the Continent, you see the entrance of Touran Bay; we have no certain knowledge of this port, though it is the most trading one on the Coast of Quinam, because the Chinese, Tonquinese, and the neighbouring natives, are the only people trading thither.

Farther within the Bay of Tonquin than the Campellas, on the Coasts of Quinam and Tonquin, the places are but little frequented by Europeans. The descriptions of these coasts are not particular enough to be of any use, except the account of two rivers, which empty themselves into this bay; one situate in latitude $20^{\circ} 6' N$. which the Chinese and Siamese usually frequent; the other, 20 leagues to the north-eastward thereof, in latitude $20^{\circ} 45' N$. It was in this last, being the deepest, that the English, French, Dutch, and Portuguese, formerly traded.

In the Bay of Tonquin you have regular soundings all over; in the middle are 40 and 45 fathoms, black sand and ouze; and on the west side, red sand, with some ouze also; the depth decreasing gradually toward the shore.

The

The west coast of the Island Hai-Nan bounds the bay on the east side. This island is large, and the land very high; it extends about 50 leagues from SW. to NE. and is 30 leagues in breadth. On the S. and SE. sides are some ports, said to be very commodious; but you should not enter them without one of the pilots of the place, who always offer their service to those ships which they see approach their coast.

The west coast of Hai-Nan Island, which faces the Bay of Tonquin, is encompassed with several banks; but you may easily discover the approach thereto, by a pretty regular decrease of the depth. If you keep sounding, and do not come under 15 fathoms, you have nothing to fear. Upon this coast there is a high mountain, which may be seen 20 or 25 leagues at sea; when it bears east, it appears craggy, and forms several points of different shape and height.

When the ships bound for Tonquin are to the northward of Campella Island above-mentioned, they need not keep any further along the west coast of Quinam; but from thence steer NW. having regard to the tides, lest they set you to the southward of Hai-Nan Island, or on the banks off the west coast: in the first case, the sight of land, and in the second, the soundings, will enable you to prevent these inconveniences, by steering a different course from that just prescribed.

As soon as you are in latitude 19° N. and in 28 or 30 fathoms, if you have not seen Hai-Nan Island, steer NbW. to make the NE. islands, the southernmost of which lies in latitude $20^{\circ} 35'$ N. 13 leagues ESE. of the principal river of Tonquin; they are of a middling height. In this course you must also allow for the tides, which sometimes set down the bay: if you are driven thither, and obliged to beat up again, you must not come nearer the bank, which lies off the coast, than 8 fathoms; and you must be careful of this likewise, as you come near the river.

Toward the northward there is a great mountain in a straight line, called the Elephant; it serves for a leading mark to the \rightarrow age: when it bears NWbN. stand to the westward, to get into 6 fathoms, which you will find about a league without the bar; and when the Little Island Perel bears NNE. about a league, you may \rightarrow .

The fishermen, inhabitants of the little village called Basta (whose situation is advantageous for the discovery of ships) serve as pilots to enter the river; they come on board upon the first notice of firing a gun; but if the ship is

H h h

pretty

on which the sea breaks. Many dangers surround this island; the bottom is foul, and therefore ships should not approach it too near.

You may sail between the continent, or Cape Bethang and Pulo Canton, in good soundings of 30 or 40 fathoms. To the southward of Cape Bethang, there are several rocks both above and under water; but keeping in the above depth, you have nothing to fear.

On Pulo Canton there is fresh water, but the difficulty is to land there; whereas on the Continent, opposite the island, there is a spacious river, with 5 or 6 fathoms water. Salan-Buigh, a town situate on its south point, may be seen 12 or 13 leagues. This coast and the parts adjacent, are very populous.

Two leagues NNW. of Pulo Canton, there is a small flat island, whose coast is very foul; but there is a good passage between these islands and the main.

NWbN. about 16 leagues along shore, lies Campella or Camponella Island, in latitude $16^{\circ} 25' N$. It is pretty large and high, extending NNW. and SSE. upon it are two high mountains (the southernmost is the highest) and in the middle a valley full of trees. You may get fresh water on the western coast, next the continent (from which this island is about 2 leagues distance); there you may \leftrightarrow in small bays, very convenient for that purpose. The shore, on the Continent, is low and sandy. At the NW. point of the island are three little islands, one of which is very high, and at the SE. point is another less.

SE about 3 leagues, there is another middling island, called the False Campella, from the SE. end whereof projects a reef. To the westward of Campella Island, upon the Continent, you see the entrance of Touran Bay; we have no certain knowledge of this port, though it is the most trading one on the Coast of Quinam, because the Chinese, Tonquinese, and the neighbouring natives, are the only people trading thither.

Farther within the Bay of Tonquin than the Campellas, on the Coasts of Quinam and Tonquin, the places are but little frequented by Europeans. The descriptions of these coasts are not particular enough to be of any use, except the account of two rivers, which empty themselves into this bay; one situate in latitude $20^{\circ} 6' N$. which the Chinese and Siamese usually frequent; the other, 20 leagues to the north-eastward thereof, in latitude $20^{\circ} 45' N$. It was in this last, being the deepest, that the English, French, Dutch, and Portuguese, formerly traded.

In the Bay of Tonquin you have regular soundings all over; in the middle are 40 and 45 fathoms, black sand and ouze; and on the west side, red sand, with some ouze also; the depth decreasing gradually toward the shore.

The

The west coast of the Island Hai-Nan bounds the bay on the east side. This island is large, and the land very high; it extends about 50 leagues from SW. to NE. and is 30 leagues in breadth. On the S. and SE. sides are some ports, said to be very commodious; but you should not enter them without one of the pilots of the place, who always offer their service to those ships which they see approach their coast.

The west coast of Hai-Nan Island, which faces the Bay of Tonquin, is encompassed with several banks; but you may easily discover the approach thereto, by a pretty regular decrease of the depth. If you keep sounding, and do not come under 15 fathoms, you have nothing to fear. Upon this coast there is a high mountain, which may be seen 20 or 25 leagues at sea; when it bears east, it appears craggy, and forms several points of different shape and height.

When the ships bound for Tonquin are to the northward of Campella Island above-mentioned, they need not keep any further along the west coast of Quinam; but from thence steer NW. having regard to the tides, lest they set you to the southward of Hai-Nan Island, or on the banks off the west coast: in the first case, the sight of land, and in the second, the soundings, will enable you to prevent these inconveniences, by steering a different course from that just prescribed.

As soon as you are in latitude 19° N. and in 28 or 30 fathoms, if you have not seen Hai-Nan Island, steer NbW. to make the NE. islands, the southernmost of which lies in latitude $20^{\circ} 35'$ N. 13 leagues ESE. of the principal river of Tonquin; they are of a middling height. In this course you must also allow for the tides, which sometimes set down the bay: if you are driven thither, and obliged to beat up again, you must not come nearer the bank, which lies off the coast, than 8 fathoms; and you must be careful of this likewise, as you come near the river.

Toward the northward there is a great mountain in a straight line, called the Elephant; it serves for a leading mark to the \rightarrow age: when it bears NWbN. stand to the westward, to get into 6 fathoms, which you will find about a league without the bar; and when the Little Island Perel bears NNE. about a league, you may \rightarrow .

The fishermen, inhabitants of the little village called Basta (whose situation is advantageous for the discovery of ships) serve as pilots to enter the river; they come on board upon the first notice of firing a gun; but if the ship is

H h h

pretty

pretty large, they will not venture to carry it up, except in the height of the spring tides.

The mouth of the river is about 2 miles wide, and the channel over the bar half a mile. When the flood comes in, it causes very dangerous eddies between the banks. During the months of May, June, and July, the water rises but 15 or 16 feet upon the bar, in the height of the springs; but in November, December, and January, 26 or 27 feet.

The river is not so wide within as at the entrance. It is about 5 or 6 leagues up this river, to a village called Domea, where the Dutch ships generally lie; but the trade is carried on higher up, about 100 miles from the river's mouth, where it is difficult sailing up in a large ship.

About 8 or 10 leagues from Perel Island above-mentioned, begins a cluster of islands and banks: these extend all along the coast, from latitude $20^{\circ} 20'$ to latitude $21^{\circ} 20'N$.

You must sail from Tonquin River at the beginning, or at least by the middle of November; then the northerly wind blows fresh; but at the end of this month, as they come from the E. and ESE. they are against you, and you will be obliged to stay till the end of December, or beginning of January, before you can get out of the bay; for then they blow from NNE. to E. (being a continuation of the eastern monsoon), and the currents run to the southward, from 30 to 60 miles in the 24 hours, as was experienced by the True Briton and Warwick, in December, 1751.

Having got over the bar, you steer across the bay, and endeavour to get sight of Pulo Campella; thence continue your course along the coast, from which you must keep at a good distance, on account of its being a lee-shore, which may puzzle ships to weather the easternmost points and capes.

CCXCVII. DIRECTIONS *for the PASSAGE to CAINA, between the ISLAND HAI-NAN and the PARACELS.*

Instead of Tonquin, if you are bound to China, you must keep along the Coast of Cochinchina, 'till you get sight of the Islands of Campella, before you cross over to Hai-Nan Island; by this means you prevent the effects of the currents, which, coming out of Tonquin Bay, set strong to the eastward during the western monsoon. From within sight of these islands you steer NEbN. to make the SE. part of Hai-Nan. You have soundings in 70 and 80 fathoms, 10 or 11 leagues off; and at 6 or 7 leagues, 50 or 60 fathoms.

When

When you make this island, coming from the southward, you do not directly see any thing remarkable, except Tinhosa Island, which is the largest, among many others, upon the coast: having on its west part a steep hill, which on the east side slopes gradually to a point. They say, that at the foot of the hill, on the west side, is a little bay. The latitude of this island is $18^{\circ} 45' N$. When Tinhosa bears NW $\frac{1}{2}$ W. about 7 leagues, in 60 fathoms, you perceive, upon the Island Hai-Nan, 3 very high mountains, the westernmost of which has on the top of it 2 hummocks, and the easternmost 2 others.

Eight leagues NEbN. off Tinhosa, is an island of a middling size, near the Coast of Hai-Nan, called Tinhosa Falsa, whose north point makes like a quoin. The islands between them are not so large, nor so high: the interior part of Hai-Nan is all very high; and when the east point of Hai-Nan bears NW. 7 or 8 leagues, it appears steep, mountainous, and cragged: among the rest there is a very high mountain, which terminates with a very remarkable round bluff, or rather a gap on the top of it, which seems like an island. The north part of this island is not so high as the eastern.

From Tinhosa Falsa to the east point of Hai-Nan there are several islands along the coast; also between this and the True Island Tinhosa.

The Islands of Pulo Tayas are low and barren: there are 9 or 10 of them, beside several rocks; the northernmost is situate in latitude $19^{\circ} 42' N$. and 11 leagues to the eastward of the northernmost part of Hai-Nan; (on occasion) you may pass between them, but it will be sufficient to leave them 4 or 5 leagues to the westward. From hence to the Island Sanciam (or St. John's) the course is NNE $\frac{1}{2}$ E. about 45 leagues; the latitude of the south point thereof has been observed $21^{\circ} 32' N$. to the eastward of which lies Pulo Outchou (or Macow), a little island very high, which is separated from it by a very small passage. You may easily know your approach to these islands by the soundings, which you find a good way off.

If you fall to the westward of Sanciam Island, and the False Sanciam, which is next it on that side, there is a Rock, which at first sight you will be apt to take for a sail; but, at the distance of 3 leagues, it has the appearance of a little pyramid, and is called the Mandarin's Cap. As soon as you get sight of it, stand to the eastward, going to the southward of the two Sanciams and Pulo Outchou; the extremities of the former lie about east and west of each other, and the latter NEbE. of the south point of the True Sanciam.

Having passed Pulo Outchou, you may see from the NW. to NE. several Islands exceeding high, double, triple, and diversely shaped, forming between

H h h 2

them

them several passages, or channels; the principal, and that which you should prefer to sail to, Macoa (or Macow), lies NE. and NEbE.

The first Island which appears in this bearing of Pulo Outchou, is called Deer Island, whose SW. end is high and rugged, with some remarkable white spots at the foot thereof. Between Sanciam and Deer Island is a great bay, and quite close to the latter some Rocks above water, which are encompassed by others underneath. You must not approach them, but continue your course to go without this whole row of islands. Next beyond Deer Island is that of Mirou (by some called Kollong, or Coang. When it bears NW. you discover at its east point a white spot, which has the shape of a mizen, or sloop's sail, by which it is known; some say, when it bears W. and W $\frac{1}{2}$ N. and that it changes into the shape of a mizen at all other bearings it can be seen, which are but very few, occasioned by the intervention of a small island that lies off it.

The soundings are mostly mud hereabout. From Pulo Outchou the depth is from 24 to 17 fathoms; and beyond Mirou Island, toward Macao, it is less.

In sailing toward Mirou Island, you see to the eastward the Ladroons, or Thieves Islands, which, with those of Lema (or Leemo), form an archipelago, extending to the northward and the eastward. The southernmost island, near the Channel of Macao, is called the Great Ladroon, because it is larger than the others. A high mountain, round at top, rises in the middle of it, and discovers it afar off. Very near it is another island of a middling size, being separated only by a narrow channel, called the Little Ladroon.

Two leagues NW. of this island there lies a little one, called by some Potri (or Pottoe), and by others the Middle Island. This last name was given it, because of all the Ladroon Islands this is the outermost in the channel; it forms 2 little hillocks, and is encompassed with rocks above and under water, projecting a good way out, which oblige ships to keep off them; so that it is better to sail along the larboard islands than those on the starboard; coasting about $\frac{3}{4}$ of a league from the Enciades, Cham-chau, and Cao Islands, as far as the Road of Macao, where you may \rightarrow in 5 or 6 fathoms, sand and mud, the town bearing NWbW. $1\frac{1}{2}$ league, and the fort on the hill NW $\frac{1}{2}$ W. The ships that stay here go further in; but this road is sufficient for those bound to Canton, who only want to take in Chinese pilots to go up the river.

CCXCVIII. DIRECTIONS for SAILING from the ISLAND SANCIAM, or ST. JOHN'S, to AMOY; with the Description of the COAST of CHINA, from one to the other.

When you are in 30 fathoms to the south-eastward, and within sight of Sanciam Island, steer ENE. to get to the southward of the Great Ladroon Island, in which course you will pass the Lema (or Lehmo) Islands, which are not far to the eastward; and, having passed them, continue the same course, to get sight of Pedro Blanco (or the White Rock), 12 or 13 leagues distant therefrom.

This is a little island, or great rock, high, steep, and in latitude $22^{\circ} 6' N$. It is easily known by its whiteness, and distance off the coast, and is safe all round; so that you may pass it by day or night without danger, either within or without, as you like best. The soundings to the southward are 25 and 30 fathoms, and to the northward, in the middle of the channel, 20 and 15 fathoms.

About 4 leagues north of the White Rock lies a point, to the northward of which is Harling's (or Harlem) Bay, where is good anchorage. To enter it, you must go without the island near the Continent; there are also two rocks at going in, which you may pass on either side. The soundings are good all over the bay; you may anchor in 10, 8, or 6 fathoms.

Opposite the bay, or as soon as you have entered it, you may see to the west a little southerly, $2\frac{1}{2}$ or 3 leagues distance, several islands near shore, which are not perfectly known; also to the eastward of the aforesaid point there is a bay, or inlet, extending to the northward, where small Chinese junks frequent.

The Bay of Bear, or of Beais (or Beias), lies NNW. of the White Rock, distance 10 leagues. The Chinese call Beias the Ti-ol-zo; it is full of rocks and little islands. There is no anchorage, unless it be under the west point of the island, which affords shelter from the SW. winds.

ENE. of Beais Bay lies Brandon's Bay, in which you have good soundings from 4 to 7 fathoms. In coming from the SSE. or E. if you would enter this bay by the east point (where is fresh water), you must sail close to it, and steer north, in soundings from 10 to 6 fathoms, soft mud; you have 4 fathoms passing by two little islands (bearing WbS. of the said point) and some other small islands near shore. You should not go between the two islands,
because

because there is foul ground, but keep on the north side of the bay; there you have shelter from all winds.

Eastward of the east point of Brandon's Bay is Cranmeis (or Cramer's) Bay, where are good roads, in 8 or 10 fathoms, which shelter from the northerly winds. To the eastward of this last lies Pissoang or Sihare Bay, otherwise called the Great Bay; its entrance is narrow, but very passable; and within it affords shelter from the southerly winds, in 6 or 7 fathoms, good ground.

From Cranmeis Bay to the Great Bay, you may sail between the islands which lie before the bay, that is to say, by leaving two islands to the starboard, and another larger one on the larboard. You may also pass safely between the two islands and the point of Cranmeis Bay. Otherwise thus; from Cranmeis Bay to the Great Bay, you may sail between the three islands which lie before the Great Bay, by leaving two islands to the starboard, and another larger one on the larboard. You may also pass safely between two other small islands that lie before Cranmeis Bay, and the eastern point of the said bay.

If you would go without the island in the channel, between this point and Pissoang, you may steer EbN. and east 4 miles, then north, till you are opposite Pissoang, which is 4 miles more; but those who pass within the island must take care of the rocks which border the coast.

About 2 leagues from Pissoang or Great Bay, lies that of Groaning (or Groenigen) in which is a good shelter from the NE. monsoons, provided you are within the island which lies in the offing, near the east point of the bay. You must not come too near the east point, by reason of a reef projecting a good way out.

ENE. about 14 miles from Groaning Bay, lies that of Reyorson (or Reyenssen) where you are sheltered from the northerly winds, in 9, 8, 7, 6, and 5 fathoms, good ground. Going in you pass close to the island at the east point; minding your lead, on account of the foul ground which surrounds it. There are several islands between Groaning Bay and that of Reyorson, between which it is affirmed that the passage is navigable in good soundings, from 10 to 4 fathoms.

It is reckoned about 12 leagues ENE. from Reyorson Bay to a point of land, with very remarkable downs of sand; the depth between them is from 8 to 12, 14, and 15 fathoms. To the south-westward of this point is a rock above water, and above a gun-shot therefrom several others, which may be seen at half tide.

Nassowire

Nafflowire (or Nafflowen's) Bay is between that of Reyorson and the Downs of Sand: as is a little hill called Black Mount.

It is nearly 5 leagues NE. from the Sand Hills to the SW. point of Wiringer (or Weringen's) Bay. These two points shelter from the northerly winds, in a sandy bay, where you may also \rightarrow in 10 or 12 fathoms; you may also \rightarrow under shelter from the SSW. winds behind an island; but, as it is encompassed with foul ground, you must come no nearer than 9 fathoms. A little to the northward of this is Tesoe or the Dry Bay under the NE. point whereof you have good \rightarrow age.

From Wiringer Bay to the Cape of Good Hope, (called also Phijo and Pitto) the course is NE and NEbE. $6\frac{1}{2}$ or 7 leagues. This cape is very high, and encompassed with low land. On the west side there is a great wide bay (or bight) called Ornefis, (or Orenfis, also Orange Bay) where you may \rightarrow under shelter from the northerly winds, in 6 or 7 fathoms. Also to the northward of the Cape of Good Hope is another shelter from the southerly winds, affording a good road in 5 or 6 fathoms, between 2 islands, about 2 miles asunder, surrounded with dangers.

As soon as you have the Cape of Good Hope bearing NW. 4 or 5 leagues, the best course for going to Amoy will be to steer E $\frac{1}{2}$ N. in order to pass without a little cluster of islands and Rocks, called the Lamoch Islands (bearing from the said cape EbN. 13 leagues) situate in latitude $23^{\circ} 8'N$. These islands are very small and low, lying about 4 leagues SSE. from Lamond Island, near the continent. They say that you may pass between this last and the others; but it seems more prudent (when not obliged to do it) to keep off them. It will be proper to be sure of being well to the eastward of them, before you stand to the northward, especially in the night-time, for fear of running on them in the dark; and when you are without them, steer NEbN, or a little more northerly, if you find that the current sets to the eastward; this will bring you in sight of Chapel Island or the Hole in the Wall) lying in latitude $24^{\circ} 10'N$. and SSW. from the mouth of Amoy harbour. You may easily know it, and when it bears ENE. or WSW. you may see through it; for this reason it is called Pierced Island or the Hole in the Wall: when it bears NbW. 4 leagues, you may see, on the Continent, a remarkable round hill, bearing NWbN. you are then in 26 fathoms water.

From thence you sail along Chapel Island, keeping about 2 miles offing; and whether you leave it on the starboard or larboard, you have no less than 14 or 15 fathoms. From hence you steer NNW. for the bay. When Chapel Island

Island bears SEbS. the depth will decrease to 14 or 15 fathoms; but if more, haul a little to the northward keeping in 11 or 12 fathoms, which is the best channel.

When you are half way from Chapel Island you may perceive a long island, called the Great Goeve, at the entrance of the harbour, at each end of which is a rocky mountain, and in the middle a sandy bay: to the NE. thereof is a pretty high rock, called the Half-Tide Rock; and, though you may pass between the Great Goeve and this rock, it is much safer to leave both on the larboard. You have 16 fathoms a quarter of a league off it. From hence you see the channel open between the Little Goeve and 5 islands which lie to the eastward, keeping mid-channel, in soundings from 14 to 15 fathoms. The breadth between the Little Goeve and the NE. island, which forms the passage, is about half a league.

As soon as you are through this channel, steer NWbN. for the SW. coast of Amoy Island, which you sail along, within half a mile, by your soundings; these are very regular. The harbour lies to the north-westward, and is easily found by the junks, or small Chinese vessels, which lie there at \rightarrow . You may \rightarrow according to the size of your ship. The Chinese pilots generally come on board (without the bay) as soon as they perceive any ships. You must not enter the port before you have obtained permission of the mandarins, especially the Hoppo, who comes to measure the ship, and settle the customs, which must be paid according to its dimensions. The trade of Amoy is not easily carried on, by reason of the difficulty they have to find security for the money which you must advance to the merchants; therefore it behoves strangers to take care of not being made their dupes, by confiding in them.

CCXCIX. DIRECTIONS for SAILING from MADRAS to MANILLA, through the STRAITS of MALACCA, in the SOUTH-WEST MONSOON. By Mr. NICHOLSON.

The usual time for sailing from the Coromandel Coast for the China Seas, through the Straits of Malacca; is May, June, or July: the beginning of August is rather late, though ships may then save their passage to China.

We sailed from Madras July 30, 1762, for Manilla, and the next day had fresh gales from WbS. to SWbS. with thick hazy weather, some hard squalls and rain, and no current; which is a proof that the nearer the land, the stronger the current.

In crossing the Bay of Bengal, we had a small current sometimes to the northward, and sometimes to the southward; but rather more to the northward, especially in drawing near the islands.

August 6, at 9 P. M. saw the land, which proved to be the Nicobar Islands; we went through the Sombrere Channel, in latitude $7^{\circ} 36' N.$ and made longitude $11^{\circ} 41' E.$ from Madras to the northernmost of the Nicobar Islands, the variation $23^{\circ} E.$ It being night when we made and passed these islands, I can give no other description of them, than that they appeared by moon-light to be pretty high land.

At midnight we took our departure from the NE. part of the northernmost of the Nicobar Islands, in latitude $7^{\circ} 25' N.$ and steered for Pulo Bouton, which we saw on the 8th at 6 A. M. In this run, variable winds with cloudy weather and smooth water; and found no current, though we found strong riplings.

When Pulo Bouton bore EbN: N. distant 6 or 7 leagues, sounded; no ground 150 fathoms; and by several observations, found no variation. This is a large high island, in latitude $6^{\circ} 30' N.$ bearing from the NE. part of the northernmost of the Nicobar Islands $E 13^{\circ} S.$ 97 or 98 leagues, with several small ones near it; and may be seen 10 or 12 leagues in clear weather. Hereabout you may see the high land of Malaya, at a great distance.

Having made Pulo Bouton, direct your course for Pulo Pera, so as to go to the eastward thereof. Between these you may see the Islands of the Great and Little Ladda, or Pepper Islands, which are high islands to the northward of Pulo Pisang. Pulo Pera is a small rocky island, in latitude $5^{\circ} 50' N.$ bearing about SSW. 15 leagues from Pulo Bouton, and may be seen 8, 9, or 10 leagues in clear weather. It is steep on all sides. You have 45 fathoms water within 2 or 3 miles of it; and 5 or 6 miles off you have no ground 50 fathoms; but when it bore NW. 5 or 6 leagues, had 45 fathoms, sandy ground.

From hence direct your course for Pulo Jarra, bearing SSE: E. 42 leagues; you have soundings between them from 35 to 25 fathoms, sometimes sand and mud. It is best passing to the eastward of Pulo Jarra, for the conveniency of the tides, and \rightarrow ing, if the winds should be contrary.

We went through the Sombrere Channel; yet I would rather advise going to the southward of the Nicobar Islands as the shorter cut, which (when attended with no more difficulty or danger) must certainly be the best. The SW. part of the Nicobar Islands lies in latitude $6^{\circ} 45' N.$ and longitude, by run from Madras, $11^{\circ} 40' E.$ or $12^{\circ} E.$ The Nicobar Islands are pretty high, and may

seen 10 or 11 leagues in clear weather. Being off the SW. part of the Nicobars, you may either make Pulo Rondo, or shape a course directly for Pulo Pera, bearing therefrom EbS. 100 leagues; and if you make Pulo Rondo, Pulo Pera bears from it E4°S. 74 leagues.

Pulo Rondo is a small, but high, rocky round island, in latitude 6° 5' N. bearing from Acheen Head NbW. 11 or 12 leagues; from the NE. part of the Nicobars, SE. $\frac{1}{4}$ S. 36 leagues; and from the SW. part, E30°S. 28 leagues. Off the south and SW. sides of this island, there are many small rocks above and under water; but it is clear and bold on the north side. The variation off this island, in 1763 and 1764, was 14° W. This is much such another island as Pulo Pera, being about the same height, but exactly round.

From Pulo Rondo may be seen the high mountains of Sumatra, bearing SSE $\frac{1}{4}$ E. or SSE $\frac{1}{2}$ E. Pulo Braffa south, 6 or 7 leagues, and Pulo Way SSE $\frac{1}{4}$ E. 4 leagues. Pulo Way and Pulo Braffa are both high islands; but Pulo Way is much the largest and highest of the whole cluster. Being off Pulo Rondo, by falling in 5 or 6 leagues to the southward of Pulo Pera, you will cut off some distance; and then direct your course for Pulo Jarra: you will have no soundings in this track till you get to Pulo Pera.

I have known ships, taking a different track from either of those above-mentioned, to have succeeded very well, and made the run much shorter than either of them. They sailed from Madras, and made Pulo Rondo, passing to the northward thereof, and steered directly for Pulo Jarra, lying from it ESE $\frac{1}{4}$ E. 104 leagues. We sailed from Madras 2 days before these ships, steering, as above related, through the Sombrere Channel, and thought we had a pretty good passage: yet they got to Malacca 2 days before us. So quick a passage by this track is uncertain, and therefore not always to be practised; since, if you have calms, and currents are against you, (as is generally the case in the SW. monsoon, on the Sumatra side) there is no \rightarrow ing. The same may be said of the passage from the Sombrere Channel to Pulo Bouton, or to Pulo Pera, which is nearly the same distance as from Pulo Rondo to Pulo Jarra; therefore the latter passage may be made as soon as either of the former, a considerable part of the distance cut off; consequently, if the winds permit, this is the best and most expeditious passage.

But it has been found by experience, that passages have generally been more expeditiously made on the Malaye Coast, which is less subject to calms, and where you have little or no current; but rather a tide, which is alternately in your favour; and where you may \rightarrow when the wind or tide is against you, and

and keep what you have got : which are sufficient reasons why ships should rather keep along the Malaye Coast, notwithstanding the success of the ships above-mentioned.

Pulo Jarra is a small, round, high island, in latitude $3^{\circ} 57'N$. and has soundings from 30 to 35 fathoms, all round it, within 6 or 7 leagues. You may pass on either side this island (which is steep to) having 30 and 35 fathoms close to it. Hereabout you generally have the current setting to the NW. at the rate of 20 miles in the 24 hours ; which current you mostly have all along the Malaye shore, in the NE. monsoons ; but the reverse on the Sumatra shore, where you find a southerly current. When Pulo Jarra bore NW. 4 leagues, had 34 fathoms ; and when it bore $NW\frac{1}{2}N$. 8 or 9 leagues, had 32 fathoms.

Between Pulo Pera and Pulo Jarra, but well in with the Malaye shore, lies Pulo Pinang, a large and high mountainous island, in latitude $5^{\circ} 25'N$. bearing from Pulo Pera $ESE\frac{1}{2}S$. 24 leagues, and from Pulo Jarra $N\frac{1}{2}W$. 26 leagues. The Sambelongs, (which are a cluster of small islands) bear off Pulo Jarra from $E\frac{1}{2}S$. to EbN . distance 8 or 9 leagues ; from Pulo Jarra, Pulo Ding-ding bears $ENE\frac{1}{2}N$. 10 or 11 leagues. Pulo Varella is an high island, and bears from Pulo Jarra $WbS\frac{1}{2}S$. 15 or 16 leagues ; and the Pulo Arroes (or Pulo Aru) lie from Pulo Jarra $SbE\frac{1}{2}E$. 25 or 26 leagues.

Steer from Pulo Jarra for Pulo Aru, SSE. and you will have very regular soundings, from 32 to 37 fathoms, between them ; but when the Pulo Arroes bear from $SbW\frac{1}{2}W$. to $SSW\frac{1}{2}W$. distance from 3 to 5 leagues, you will deepen your water to 40 and 44 fathoms ; when the easternmost Arroes bears $SW\frac{1}{2}W$. you have 22 fathoms ; and when it bears $SWbW$. $2\frac{1}{2}$ leagues, and the Long Arroes $W\frac{1}{2}S$. you have 11 or 12 fathoms.

The Pulo Arroes are a number of great and small rocks, extending ESE. and WNW. 3 or 4 leagues. One of them is a long, low island, with trees upon it, in latitude $2^{\circ} 50'N$. and is called the Long Arroes. The easternmost is a pretty high, round rock, covered with trees, and is called the Round Arroes ; its latitude is $2^{\circ} 45'N$. The Round Pulo Arroes is a leading mark through the channel, between the N. and S. sand-heads, and may be seen from a large ship's poop, in clear weather, 7 or 8 leagues ; but none of the other rocks above 4, 5, or 6 leagues.

It flows at the Pulo Arroes on the full and change, E. and W. or 6 hours ; the flood $SEbS$. and the ebb $NWbN$. each way 6 hours, strong tides, which occasion great riplings, as if in shoal water, or danger, though there is none ;

but, as the tides have great dependence on the winds, there have been instances of their irregularity, the ebb running strong for 9 hours together in the NE. monsoon, and the flood as long in the SW. monsoon. Variation 36° W. 1763.

Between these rocks and the North Sand is the channel by which ships generally pass through these straits. When the Pulo Arroes bears SW. distance about 8 or 9 leagues, you are on the edge of the North Sand, and have soundings from 20 to 15 and 9 fathoms; from whence, if the weather is clear, you may just see Parcelar Hill, bearing about ESE. 13 or 14 leagues: but I would not advise any ship to keep so near the North Sand, but rather within 3 or 4 leagues of the Pulo Arroes.

In steering SW. toward the Pulo Arroes from the last bearings, you will deepen your water, as you cross over, from 9 or 10 fathoms, on the edge of the North Sand, to 15, 25, 40, 45 fathoms, about mid-channel; from thence, still standing to the southward toward them, the water shoals gradually from 44 to 40, 30, 25, 20, 15, to 12 fathoms, ouzy ground, within 2 leagues of the Pulo Arroes, about mid-way, between the Long and Round Pulo Arroes.

Before I proceed to give directions for crossing over from the Pulo Arroes to the Malaye Shore, through the channel, between the North and South Sands, &c. I shall give you as clear and distinct an account as I can of the dangers that lie in the way, with their bearings and distances from the most remarkable places; the marks to go clear of them, as also the true soundings, &c. that, by giving you a clear and distinct idea of the channel you are to go through, you may know the better how to avoid the dangers.

Pulo Parcelar, commonly called Parcelar Hill, lies in latitude 2° 48' N. and bears from the high, round, or easternmost Pulo Arroes, E 3° N. 16 or 17 leagues. This is a single remarkable high hill, near the shore, on the Malaye Coast; the rest of the islands or land near it, being very low, cannot be seen at any great distance. This hill, therefore, being the only thing you can see on the Malaye Shore, is the leading mark through the channel, between the North and South Sand-Heads. The variation 16° W. 1763.

The North Sand lies about NNW. and SSE: it is reckoned 9 or 10 leagues in length, and is very dangerous; the south part thereof is commonly called the North Sand-Head, and bears, from the Pulo Arroes, EbN ¼ N. distance 8 leagues, and from Parcelar Hill, WbN. 9 or 10 leagues. In like manner, the north part of the South Sand is commonly called the South Sand-Head, and bears,

bears, from the Round Pulo Arroë, E½S. about 7 leagues; and from Parcelar Hill, W½S. 9 or 10 leagues. This sand lies SEbE. and NWbW. in length about 12 leagues. The distance between these Sand-Heads is reckoned about 3½ leagues, with very irregular soundings, from 25 to 8 fathoms, between them.

It is said there are several shoals to the northward and eastward of the North Sand, out of the track of a ship coming through this channel. There is an hard shingly bank, with some sand, lying in the fair-way, that has only 2½ and 3 fathoms on it; consequently it is very dangerous; from whence Parcelar Hill bears E3°S. and the low land (or the trees on the low land) just seen from the poop, distance 6 or 7 leagues; and the Round Pulo Arroë, seen from the main-top, bearing W9° 30'N.

There are two banks in this channel, both of which you pass over in almost the same depth of water, and very hard ground between them. You have from 15 to 18, 20, and 22 fathoms water. The westernmost is between the North and South-Sand-Heads. By keeping Parcelar due E. 9 or 10 leagues, and the Round Pulo Arroë W8°S. 7 or 8 leagues, you will have no less than 10 or 11 fathoms on it; but if you bring the Round Pulo Arroë to bear WbS½S. you have only 8 or 9 fathoms, which is too far to the northward.

In going from this bank to the westward, you soon deepen your water to 19, 20, and 24 fathoms, and shoalen it as suddenly, going to the eastward. Be sure of your bearings, and there is no danger. The shoalening on the easternmost bank is 9 fathoms; Parcelar Hill due E. 6 or 7 leagues, or the trees on the low land about Parcelar just in sight from the poop, and the Round Pulo Arroë W6°S. You are then a-breast the 2½ fathoms bank; and it is not more than 1½ or 2 miles to the northward of you; toward which it shoalens gradually to 5 and 4 fathoms.

Between the North and South Sand and Parcelar, the tides run strong; the flood SEbE. and the ebb NWbW. It flows at full and change ESE. and WNW. or 7½ hours; and it ebbs and flows perpendicularly 8 or 9 feet.

If a ship, coming from the Pulo Arroës, and crossing over to Parcelar, has a foul wind, and is obliged to turn through the channel, it is allowed, by most navigators, that she may bring Parcelar Hill to bear from E½S to E½N. between the North and South Sand-Heads. But when a ship has got so far to the eastward as to lose sight of the Round Pulo Arroë upon deck, and before she has
sight

sight of the low land about Parcelar, she must not stand to the northward further than to bring Parcelar Hill due E. for E $\frac{1}{2}$ S. will bring her on the 2 $\frac{1}{2}$ fathoms bank, as before-mentioned; but she may stand farther to the southward, and bring Parcelar Hill to bear E $\frac{1}{2}$ N. and when she gets sight of the low land of Parcelar, may bring the Hill EbN. or more northerly, without any danger. Notwithstanding, I would advise the keeping a boat a-head to sound, as is commonly done in this channel.

If at the Pulo Arroes you have a leading wind through the channel to Parcelar, shape your course, with respect to the tides and winds, so as to keep the Round Pulo Arroes from W $\frac{1}{2}$ S. to W $\frac{1}{2}$ S. but W $\frac{1}{2}$ S. is the best bearing: steer then till you get sight of Parcelar Hill; then keep the hill due east, till you get sight of the low land about Parcelar: you may bring the hill to bear EbN. or more northerly, and run within 2 or 3 leagues of the low land about Parcelar.

Having given the bearings and marks for the sands and dangers that lie in the way of crossing over from the Pulo Arroes to Parcelar, and also the marks to avoid them, with the true soundings, &c. I shall now give a short direction for going through the channel, with the different depths of water you meet with in crossing over.

Being off the Pulo Arroes, within 3 leagues of them, in 12 or 14 fathoms water, shape your course, with respect to the tides and winds, so as to keep the Round Pulo Arroes from W $\frac{1}{2}$ S. to W $\frac{1}{2}$ S. till you get sight of Parcelar Hill (as above directed), in which track you will have irregular soundings from 12 or 14 to 18, 20, and 25 fathoms; and when the Round Pulo Arroes bears W $\frac{1}{2}$ S. 6 or 7 leagues, you will soon shoalen your water to 12, 10, and 9 fathoms, when you are on the westernmost bank, and between the North and South Sand-Heads.

Parcelar bearing off you E. or E $\frac{1}{2}$ S. pretty good bearings are hereabout. Keep Parcelar Hill due east, and you will have 9 and 10 fathoms on this westernmost bank, and soon deepen to 15, 18, 20, 22, 23 fathoms; then you are between the westernmost and easternmost banks; and as soon as you begin to lose sight of the Round Pulo Arroes upon deck, you are coming upon the easternmost bank, and will shoalen your water to 15, 12, 10, 9 $\frac{1}{2}$ fathoms; and when you can just see the trees on the low land about Parcelar, you are a-breast of the 2 $\frac{1}{2}$ fathoms bank. If Parcelar Hill bears due east, it is then 1 $\frac{1}{2}$ or 2 miles to the northward of you; you are then also clear of the South Sand, and may steer more southerly, so as to bring Parcelar Hill EbN. or even more northerly.

therly. By continuing your course to the eastward, you will soon deepen your water again to 14, 16, 18, 20, 22, and 24 fathoms, ouze; and from 24 shoalen again to 17 or 18 fathoms, 5 or 6 miles off the low land of Parcelar.

Between Parcelar and Cape Richado the coast forms a deep bay. The channel between the South Sand and the Malye Coast is about 4 leagues wide. The soundings between Parcelar and Cape Richado are from 15, 20, 25, 30, to 35, and in some places 40 fathoms, ouzy ground; but, in general, very irregular, deepening and shoalening several fathoms at a cast; so that, in the night-time, there is no judging by the soundings where you are. The ground is all ouze, excepting about the middle of the channel.

Parcelar bearing NEbE. about 2 leagues off shore, there is a small bank of 13 fathoms, sand, gravel, and small stones. Also within the bight, NW½N. 4 or 4½ leagues from the cape, and SEbS. from Parcelar Hill, about 2 or 3 miles off shore, there lies a bank of sand, whereon some ships have been lost; by keeping the cape ESE½S. or ESE½S. and Parcelar Hill NNW. or NNW½W. you may go 2 or 3 miles without it, in 16, 18, or 20 fathoms water; and keeping in from 18 to 22 fathoms, between Parcelar and Cape Richado, will lead you in a good channel, from 4 to 6 miles off shore.

Cape Richado is a high bluff point of land, and steep to (something like Mount Dilla on the Coast of Malabar, only not so high), stretching out to seaward in a narrow point of land, which forms a deep bay on each side of it, with a small rock, or island, near its extremity; it lies in latitude 2° 28' N. and bears from Parcelar Hill, SE. a little southerly, about 13 leagues. About a league without the cape you may see the low land of Sumatra from the deck, this being the narrowest part of the straits to the northward of Malacca.

Here the tides run strong, flowing, on the full and change, NW. and SE. or 9 hours; the flood to the southward; and the ebb to the northward. The soundings are uneven and irregular, from 15 or 16 to 30 fathoms; within 2 or 3 miles of the cape, you will have 22, 23 or 25 fathoms, and only 15, 16, and 18 fathoms at 2 or 2½ leagues, the cape bearing ENE. and then 3 or 3½ leagues to the westward of the cape, you will have 30 and 35 fathoms; and then from 35 fathoms it shoalens suddenly to 10 fathoms hard ground, on the south sand.

About 2 leagues EbS. from Cape Richado, is the mouth of the River Lingin, a place that produces much tin.

From Cape Richado, Malacca Hills bear EbS½S. and the Great Water Island SE½S. about 12 leagues; but the course to Malacca Road is SEbE. about

about 10 leagues. You have soundings from 16 to 20, and 25 fathoms, from 3 to 6 miles off shore, ouzy ground; only when Cape Richado bears NW. 3 or 4 leagues, and about 4 or 5 miles off shore, there is a hard bank of 13 fathoms; but within, as well as without it, 20 and 24 fathoms. Also, about mid-way between Cape Richado and Malacca Road, lies a rock above water, about a mile off shore; but that cannot be reckoned dangerous, as no ships have occasion to come so near the shore.

There is no danger going into Malacca Road. If you are in the offing in 20 or 23 fathoms, you shoalen your water gradually to 7 fathoms, as you run in for the road. I would not advise a great ship to go into less than 7½ fathoms; for it shoalens suddenly from 7 to 5 and 4 fathoms. Ships should be still more careful not to go too far to the southward or the SE. part of the bay; there the ground is foul and rocky, and shoalens suddenly from 8 to 3 fathoms. Off Woody or Fisher's Island there is no danger, as some directions mention: I have sounded well about it, and found that a ship, upon occasion, might go within half a mile of it, in 16 fathoms water; or have 10 fathoms within a quarter of a mile of it, and 20 fathoms about a mile without it. You may ⇨ in Malacca Road from 13 to 7½ fathoms, ouzy ground. Malacca Church on the NW part of Mount Moora E. 27° 30' N. the SW part of Woody or Fisher's Island W. 36° 15' N. and the outermost of the Four Brothers, or Water Islands, E. 50° 20' S. distance from Malacca 1½ mile.

It flows in Malacca Road SSE. and NNW. or 10½ hours; the flood runs ESE. and the ebb WNW. pretty strong tides. Half flood in the road is high water ashore; at three quarters ebb, a ship's boat cannot get into the river.

Malacca lies in latitude 2° 12' N. and longitude 102° 10' E. of London; the variation, by several observations, was 1° 24' W. 1763.

Here the Dutch have a fort, and a very considerable settlement, which affords refreshments of all kinds in great plenty: the church stands upon a high hill in the middle of the garrison, and is always kept very white, which, together with its situation, makes it very conspicuous at a great distance; by this, Malacca may be easily known.

From Malacca sail without, or to the westward of all the Water Islands, and you will deepen your water gradually from 8 to 20 fathoms; and from 3 to 6 miles without the Water Islands, you will have from 20 to 25 fathoms. Hereabout the flood runs SEbS. and the ebb NWbN. at the rate of 1½ knot; the bottom ouzy, and good ⇨age.

Being

Being without the Water Islands, steer SEbS or SE. for Mount Formosa, which is 11 or 12 leagues distant, in soundings from 20 to 24 fathoms; but if the winds are contrary, you may stand over from 15 fathoms on the Malaye Shore to 15 fathoms on the Sumatra Shore, but no nearer.

From the outermost of the Four Brothers, or Water Islands, which lies in latitude $2^{\circ} 4' N$. Mount Moora bears EbS;S. 7 or 8 leagues; and Mount Formosa ESE;S. 11 or 12 leagues. The 2 mounts, or hills, lie from each other SE. and NW. about 7 leagues, in latitude 2° and $1^{\circ} 48' N$. From the Water Islands to a-breast Mount Moora, you have soundings from 20 to 26 fathoms, ouzy ground, from 3 to 4 or 5 leagues off shore. The tides here are very uncertain, but set longest and strongest to the westward.

From Mount Moora the course is SEbS. to Formosa Point and River's Mouth off which, about 2 leagues, lies a shoal stretching along shore: from the SE. end thereof Mount Formosa bears NEbN. and Mount Moora NWbN. from the NW. part of it Mount Formosa E;S. and Mount Moora N. and NbW. Just without this there is another bank, whereon there are but 5 fathoms, hard ground.

From Formosa Point, to Pulo Pisang, the course is SEbS. $7\frac{1}{2}$ or 8 leagues; and when Mount Formosa bears NE. between 3 and 4 leagues, you will see Pulo Pisang bearing SE;E or SEbE. distance 7 or 8 leagues; and will then have soundings from 20 to 22 or 23 fathoms, ouzy ground. The straits hereabout are about 10 leagues broad.

Ships always keep on the Malaye side (on which they may borrow into 11 or 12 fathoms with safety, on occasion) because off the opposite shore are many shoals, and foul ground. In the middle there is a bank which stretches ESE. and WNW. 8 leagues in length; from the westernmost part whereof Mount Formosa bears NEbN. and Pulo Pisang EbS. about 8 leagues, or just in sight; and from the east end of this bank, Pulo Pisang bears ENE;N. or NEbE. $2\frac{1}{2}$ or 3 leagues.

Between this bank and Pulo Pisang is the common channel, the leading marks for which are, Formosa Hill NNW;W. and Carimons SSE;E. in 21 or 22 fathoms, mid-channel; or from 9 to 10 or 12 fathoms, 2 or 3 miles from Pulo Pisang, to 18 or 19 fathoms on the sand side; from which it shoalens suddenly to 10, 9, 7, 5 fathoms. The channel is but narrow, according to most navigators opinion, it being (as they imagine) but 4 miles from the shoal, off the island, to the sand; but, in my opinion, the channel is, at least, 2 leagues wide, and am well assured of it by my own experience;

K k k

for

about 10 leagues. You have soundings from 16 to 20, and 25 fathoms, from 3 to 6 miles off shore, ouzy ground; only when Cape Richado bears NW. 3 or 4 leagues, and about 4 or 5 miles off shore, there is a hard bank of 13 fathoms; but within, as well as without it, 20 and 24 fathoms. Also, about mid-way between Cape Richado and Malacca Road, lies a rock above water, about a mile off shore; but that cannot be reckoned dangerous, as no ships have occasion to come so near the shore.

There is no danger going into Malacca Road. If you are in the offing in 20 or 23 fathoms, you shoalen your water gradually to 7 fathoms, as you run in for the road. I would not advise a great ship to go into less than 7½ fathoms; for it shoalens suddenly from 7 to 5 and 4 fathoms. Ships should be still more careful not to go too far to the southward or the SE. part of the bay; there the ground is foul and rocky, and shoalens suddenly from 8 to 3 fathoms. Off Woody or Fisher's Island there is no danger, as some directions mention: I have sounded well about it, and found that a ship, upon occasion, might go within half a mile of it, in 16 fathoms water; or have 10 fathoms within a quarter of a mile of it, and 20 fathoms about a mile without it. You may ⇨ in Malacca Road from 13 to 7½ fathoms, ouzy ground. Malacca Church on the NW part of Mount Moora E. 27° 30' N. the SW part of Woody or Fisher's Island W. 36° 15' N. and the outermost of the Four Brothers, or Water Islands, E. 50° 20' S. distance from Malacca 1½ mile.

It flows in Malacca Road SSE. and NNW. or 10½ hours; the flood runs ESE. and the ebb WNW. pretty strong tides. Half flood in the road is high water ashore; at three quarters ebb, a ship's boat cannot get into the river.

Malacca lies in latitude 2° 12' N. and longitude 102° 10' E. of London; the variation, by several observations, was 1° 24' W. 1763.

Here the Dutch have a fort, and a very considerable settlement, which affords refreshments of all kinds in great plenty: the church stands upon a high hill in the middle of the garrison, and is always kept very white, which, together with its situation, makes it very conspicuous at a great distance; by this, Malacca may be easily known.

From Malacca sail without, or to the westward of all the Water Islands, and you will deepen your water gradually from 8 to 20 fathoms; and from 3 to 6 miles without the Water Islands, you will have from 20 to 25 fathoms. Here about the flood runs SEbS. and the ebb NWbN. at the rate of 1½ knot; the bottom ouzy, and good ⇨age.

Being

Being without the Water Islands, steer SEbS or SE. for Mount Formosa, which is 11 or 12 leagues distant, in soundings from 20 to 24 fathoms; but if the winds are contrary, you may stand over from 15 fathoms on the Malaye Shore to 15 fathoms on the Sumatra Shore, but no nearer.

From the outermost of the Four Brothers, or Water Islands, which lies in latitude $2^{\circ} 4' N$. Mount Moora bears EbS; S. 7 or 8 leagues; and Mount Formosa ESE; S. 11 or 12 leagues. The 2 mounts, or hills, lie from each other SE. and NW. about 7 leagues, in latitude 2° and $1^{\circ} 48' N$. From the Water Islands to a-breast Mount Moora, you have soundings from 20 to 26 fathoms, ouzy ground, from 3 to 4 or 5 leagues off shore. The tides here are very uncertain, but set longest and strongest to the westward.

From Mount Moora the course is SEbS. to Formosa Point and River's Mouth off which, about 2 leagues, lies a shoal stretching along shore: from the SE. end thereof Mount Formosa bears NEbN. and Mount Moora NWbN. from the NW. part of it Mount Formosa E; S. and Mount Moora N. and NbW. Just without this there is another bank, whereon there are but 5 fathoms, hard ground.

From Formosa Point, to Pulo Pisang, the course is SEbS. $7\frac{1}{2}$ or 8 leagues; and when Mount Formosa bears NE. between 3 and 4 leagues, you will see Pulo Pisang bearing SE; E or SEbE. distance 7 or 8 leagues; and will then have soundings from 20 to 22 or 23 fathoms, ouzy ground. The straits hereabout are about 10 leagues broad.

Ships always keep on the Malaye side (on which they may borrow into 11 or 12 fathoms with safety, on occasion) because off the opposite shore are many shoals, and foul ground. In the middle there is a bank which stretches ESE. and WNW. 8 leagues in length; from the westernmost part whereof Mount Formosa bears NEbN. and Pulo Pisang EbS. about 8 leagues, or just in sight; and from the east end of this bank, Pulo Pisang bears ENE; N. or NEbE. $2\frac{1}{2}$ or 3 leagues.

Between this bank and Pulo Pisang is the common channel, the leading marks for which are, Formosa Hill NNW; W. and Carimons SSE; E. in 21 or 22 fathoms, mid-channel; or from 9 to 10 or 12 fathoms, 2 or 3 miles from Pulo Pisang, to 18 or 19 fathoms on the sand side; from which it shoalens suddenly to 10, 9, 7, 5 fathoms. The channel is but narrow, according to most navigators opinion, it being (as they imagine) but 4 miles from the shoal, off the island, to the sand; but, in my opinion, the channel is, at least, 2 leagues wide, and am well assured of it by my own experience;

for when Mount Formosa bore $N\frac{1}{2}W$. and Pulo Pisang $E\frac{1}{2}S$. 4 leagues, and the Great Carimon Island SE. had from 21 to 22 fathoms water, we steered $ESE\frac{1}{2}S$. 6 miles, and had from 21 to 17 fathoms; then Mount Formosa bore $NbW\frac{1}{2}W$. and Pulo Pisang $E\frac{1}{2}N$. 6 or 7 miles. We steered the same course 5 miles, and had from 17 to $19\frac{1}{2}$ fathoms; then Mount Formosa bore $NNW\frac{1}{2}W$. (which is the leading mark through between the island and the sand) and Pulo Pisang ENE . northerly, distance 4 miles: we then steered SE. 3 miles, and had from 20 to 21 fathoms; then Mount Formosa bore $NNW\frac{1}{2}W$. Pulo Pisang $NE\frac{1}{2}E$. 5 miles, and the Great Carimon $SEbS$. then we were clear of the sand to the south-eastward of it. This proves the channel is wider than most navigators have supposed it. We were a fleet of 11 sail, and much scattered; several ships, without and within us, 3 or 4 miles; and none of them had shoalings on this sand.

Pulo Pisang is a pretty large, high, woody island, in latitude $1^{\circ} 23'N$. bearing from Point Formosa $SEbS$. $7\frac{1}{2}$ or 8 leagues: it lies 5 or 6 miles off the Malaye Coast, and has 3 small islands by it. This island may be seen in clear weather 9 or 10 leagues; then it makes in a small hummock, like a boat turned bottom upward. It flows here north and south; the ebb runs longest to the NW. The variation, by several observations, $53^{\circ}W$. 1763.

From Pulo Pisang, Pulo Cocob lies $SE\frac{1}{2}E$. $5\frac{1}{2}$ or 6 leagues, and the easternmost point of the Little Carimons $SSE\frac{1}{2}E$. 8 or $8\frac{1}{2}$ leagues. Between Pulo Pisang and Pulo Cocob you have soundings from 17 to 20 fathoms, ouzy ground; and between Pulo Cocob and the Carimons from 17 to 20, 21, or 17 fathoms toward the Carimons; and you should stand no nearer the Carimons than that depth, ouzy ground from side to side. Pulo Cocob is a low flat island, close in with the Malaye shore, from whence the east point of the Little Carimon bears SSW. about 4 leagues. Between these is the channel of about 3 leagues in breadth.

The Carimons are 2 pretty large and high islands, called the Little and the Great Carimon; they are both very high land; but the Great Carimon is the highest, and has a very high remarkable peak on it. Observe, that between Pulo Pisang and Pulo Cocob, the Malaye Coast is flat and shoal; therefore come no nearer it than 14 or 12 fathoms, and bring Pulo Pisang no further to the westward than NW. or $NW\frac{1}{2}N$. nor stand nearer to the Sumatra side than 15 fathoms: under this depth is foul ground, and shoal water; particularly when the E. point of the Carimons bears $SE\frac{1}{2}E$. distance 4 or 5 leagues; and the

the outermost of the Two Brothers (2 small rocks) right on with it, about 3 leagues distance, and Pulo Pisang N $\frac{1}{2}$ E. about 4 leagues; it shoals suddenly from 15 fathoms soft, to 9 fathoms hard ground. The Two Brothers bear from Pulo Cocob SWbS. Between them are good soundings from 24 to 15 fathoms.

Tanjang-boulus is a point of low land on the Malaye shore, bearing from the east point of the Carimons NEbN. distance about 4 leagues, and from Pulo Cocob, SEbE. 3 or 4 miles. The channel lies between these; and you may stand to each side in 16 fathoms, soft ground, and no danger.

The tides hereabout are very uncertain, depending much on the wind; and the tides from the Straits of Sineapour and Dryon meet here in some measure: they set strongest to the eastward and the southward, but generally longest to the NW. sometimes 18 hours one way, and 6 hours the other. When at \rightarrow in 22 fathoms, Tree Island bearing SEbE. 2 miles, found the tide set 1 $\frac{1}{2}$ knot from NW. to N. for 12 hours. Sometimes it would slack, and then run strong as before. It sometimes runs as long, or longer, to the SE. and much stronger.

The south part of Barn Island bears from the north part of the Little Carimon E $\frac{1}{2}$ N. distance 6 $\frac{1}{4}$ or 7 leagues. Barn Island is a pretty large and high woody island; on the west side whereof is a white mark, which at a distance much resembles a large barn, by which it may be easily known. There is good \rightarrow age to the westward of Barn Island, from 9 to 14 fathoms, and from $\frac{1}{2}$ to 1 $\frac{1}{2}$ mile off shore, the island bearing from NE. to SE. you have a good birth, with the outermost of the 2 islands, Rabbit and Coney, bearing east, southerly; and the extremes of Barn Island from ENE $\frac{1}{2}$ N. to NbE. about $\frac{1}{2}$ of a mile off shore.

Tree or Sandy Island is a narrow island, or sand, lying ESE. and WNW. about 2 miles in length. At low water this island is dry; at high water it is almost entirely covered, there being little else to be seen but a large remarkable tree, which is nearest the east part of it: there are 5 or 6 other small trees and shrubs, and a small rock; which is all that is to be seen at high water. The NW. side of this island is broken ground, and from the west end of it there runs out a long ledge of rocks, part of which are dry at low water. Come no nearer this part of it than 17 fathoms. The ebb tide sets over these rocks; the tree on this island bears from the north peak of Great Carimon E $\frac{1}{2}$ N. and from the south part of Barn Island WbS.

To the ESE. from Tree or Sandy Island, is a small island, called Red Island, from the redness of the sand on its beach. This island is covered with pretty high trees, and may be seen a pretty good distance. To the eastward and southward of this are a great number of other islands. It bears from the south part of Barn Island SbW. about 4 miles.

The Rabbit and the Coney are 2 small rocks, or islands, which are steep to, and lie SbW $\frac{1}{2}$ W. from the south part of Barn Island; distance about half a mile: when they are in one, they bear NbE $\frac{1}{2}$ E. and SbW $\frac{1}{2}$ W. You have 22 or 20 fathoms within $\frac{1}{2}$ of a mile of these rocks; and 1, or 1 $\frac{1}{2}$ mile to the eastward of them, you have irregular soundings, from 19 to 30 fathoms, rocky ground: from these rocks to Barn Island, you have from 22 to 14 fathoms, to the westward of Barn Island; there you may \rightarrow in clear ground from 9 $\frac{1}{2}$ to 12 or 14 fathoms, on a bank about 1 $\frac{1}{2}$ or $\frac{3}{4}$ of a mile off shore; between which and Barn Island you have 18, 19, and 20 fathoms, gravelly ground.

Being mid-channel, between Tanjan-boulus and the Little Carimon, in soundings from 17 to 20 fathoms, ouzy ground, steer to the south-eastward, till you bring the north point of the Little Carimon to bear W $\frac{1}{2}$ S. or W $\frac{1}{2}$ S. then steer to the eastward with these bearings, and you will have from 18 to 20 fathoms; and as you go to the eastward, you will bring the north high peak of Great Carimon on with the south point of the Little Carimon (which will then bear WbS $\frac{1}{2}$ S.) and the north point of the Little Carimon will bear W $\frac{1}{2}$ S.

These are good leading marks to go clear of Tree or Sandy Island, about 2 miles to the northward thereof. Endeavour to get sight of Tree Island as soon as possible, seeing it lies in the fair way, and is a good mark for the Straits of Sincapour: but you must be careful of the setting of the tide hereabout, it being very uncertain; and also to avoid the northern shore, lest, being becalmed, or having a southerly wind, and being out of the true tide, you be set in the old channel, or straits, from whence it would be difficult for a ship to get into the fair way again, on account of the constant in-draught there is amongst these islands.

Still steering to the eastward, with either or both of the above leading marks on, you will soon see Barn Island, with the white mark on it, bearing EIS. you may steer right for it with great safety. The soundings, mid-channel, between Tree Island and Barn Island, are from 24 to 30 and 33 fathoms, which shoalen, on Tree Island side, to 15 or 16 fathoms, (under which it is not

advisable

adviseable to go) and on Barn Island side to 10 or 9 $\frac{1}{2}$ fathoms, about $\frac{1}{2}$ of a mile from the westernmost part thereof, where there is good \rightarrow age, as above-mentioned. From that depth toward Barn Island, you deepen your water to 14, 18, 19, and 20 fathoms; and toward the Rabbit and Coney, the soundings are from 10 to 14, 16, 20, and 22 fathoms. You may pass, if there be occasion, within $\frac{1}{2}$ of a mile of the Rabbit and Coney, in 20 and 22 fathoms, red gravel.

Between the Rabbit and Coney and Red Island, is the channel into the Straits of Sincapour. You may keep mid-channel; but it is best to keep nearest the Rabbit and Coney, which are bold to; whereas the south shore is foul and dangerous, with several sunken rocks; some of which are not seen but at low water, viz. the westernmost rocks, which lie SEbS. 4 or 5 miles from Barn Island: these are covered at high, but dry at low water. You have 30 fathoms, about a mile to the northward of them; and soundings have been had 20 fathoms close to them. There is not more of them dry at low-water than the bigness of a ship's long-boat.

The next is a single black rock, about the size of a ship's long-boat; it is always to be seen, lies about one half of the channel over from the islands on the south side, and is steep to, having 17 or 18 fathoms close to it, and 30 fathoms a little without it: this bears from the former danger about east, and from Barn Island EbS. 6 or 7 miles, and from St. John's Island SW $\frac{1}{4}$ S. 2 $\frac{1}{2}$ or 3 miles.

The third is a ledge of rocks always above water, and a shoal without it, which lie EbN. 6 or 7 miles from the second rock, and SE $\frac{1}{4}$ S. from St. John's Island; but the shoal lies SEbS. from St. John's; between which and the rocks, you have from 15 to 18, 20, 30, 40, and 50 fathoms water; and then shoalen again suddenly to southward.

St. John's is a pretty large and high island, covered with trees, and has 2 small islands to the westward, pretty near it. This is the easternmost island, as Barn Island is the westernmost, on the north side of this narrow passage; and they bear of each other EbN. and WbS. about 4 leagues: in case you want wind or tide to pass through before night, there is good \rightarrow age under St. John's Island, from 12 to 14 fathoms, the island bearing from WSW. to SWbW. about 2 miles distance; there, and on most of the island, you have plenty of water; or you may \rightarrow to the westward of Barn Island, as before-mentioned. You may likewise, upon occasion, \rightarrow between St. John's and Barn Island, in 18

or

or 19 fathoms; though it is best not to \rightarrow here if it can be avoided; for the bottom is rather foul, and the soundings irregular.

The tides run very strong between St. John's and Barn Island, and set as the islands lie; the flood EbN: and the ebb WbS. The time of their flowing is uncertain; they run longest to the eastward in the SW. monsoon, and longest to the westward in the NE. monsoon.

Being a-breast the Rabbit and Coney, your course to St. John's Island is EbN. or ENE. according as you have the wind; the distance is about 4 leagues: the soundings are very irregular, from 30, 25, 20, and 18 fathoms, hard ground, shoalening 5, 6, or 8, and sometimes 10 or 12 fathoms, at a cast. In this track you should borrow on St. John's Island, in order to avoid the dangers before-mentioned on the south shore. You may go within a mile or less of St. John's Island clear of all danger, it being bold to; within $\frac{1}{4}$ of a mile of it you have 20 and 24 fathoms. Off the south part of St. John's Island, it deepens toward the south shore to 30, 40, and 50 fathoms, and then shoalens suddenly.

From St. John's Island Point Romania lies EbN: distance 13 leagues; and Pedro Branco EbN. 15 or 16 leagues. Between these places is a wide and clear channel, especially on the north side, except a sand which stretches out SE. from the east end of Sincapour Island, about 6 or 7 miles, and is steep to, having from 12 to 14 fathoms just without it: its bearings are, St. John's Island WSW. 6 leagues; the east point of Sincapour NWbN. $2\frac{1}{4}$ leagues; Johore Hill NE. and the easternmost land to be seen off Point Romania E $\frac{1}{2}$ N. 6 leagues. Come not under 18 or 20 fathoms water, nor nearer the north shore than 3 leagues, till you are past the said bank; taking care to keep St. John's Island WbS. and Point Romania EbN.

When you are past this dangerous shoal, you may keep in with the north shore, the coast being clear and steep, in soundings of 15 or 16 fathoms, ouzy ground; or in the fair way, from 20 to 25 or 30 fathoms, steer directly for Pedro Branco (a low white rock at the SE. entrance of the straits), to the northward of which you must pass; for to the southward thereof is a continued ledge of rocks, above and under water, to the south shore, or Island of Bintang. Barbucet Hill, and the southernmost island off Point Romania, when in one, bear WNW.

Pedro Branco lies from the outermost rock, or island, off Point Romania, EbS: S. about $2\frac{1}{2}$ leagues, which is the breadth of the channel. Mid-channel the soundings are 25 fathoms, near the reef off Point Romania 18 or 20 fathoms, and

and near Pedro Branco 30 fathoms; but to the eastward of Pedro Branco it shoalens again to 20, 15, and 12 fathoms. Pedro Branco bearing WbS. 3 leagues, you have 12½ fathoms, sandy ground; but near the reef off Point Romania you have hard ground and uneven soundings, from 17 to 12 fathoms. The latitude of Point Romania is 1° 23' N. The longitude from London, 103° 15' E. The variation by observations, 32° W. 1763.

The shoal, or reef, that lies off Point Romania, is larger and more dangerous than is generally imagined. We went through these straits in the night, by moon-shine, with the wind at SE. and dragged along the south side of the reef in 20, 19, 18, 22, 20, and next cast had 17 fathoms. I could see (by altering the land) that a very strong tide set us to the eastward; and, by shoalening the water, imagined we were coming near the SE. part of the reef; whereupon, ~~+~~ed in 17 fathoms, and lay till day-light: when the ship was brought up, tried the current, and found it set NEbN. 4 knots; and at day-light had these bearings, the outermost island off Point Romania WSW. 3½ leagues, and Pedro Branco SSE.

His Majesty's ship Panther made the signal of distress, being amongst the shoals: she bore of us NNE. about a mile distance. She was in 4 fathoms, and had only 3½ fathoms all round her, except the place she got out at, and there but bare 4 fathoms. At 6 A. M. we weighed, being slack tide, or low water, and steered E½N. 3 miles, in 17, 16½, 17, and 18 fathoms; then steered NEbN. 2 miles, and had from 18 to 24 fathoms: then Bintang Hill bore S½E. Barbucet Hill W½N. Pedro Branco SbW. westerly, and the outermost island off Point Romania WbS½S. about 4 leagues.

I would not advise a ship, going through these straits to the eastward, with the wind S. or SE. to come nearer the south side of this reef than 20 fathoms; for it shoalens very suddenly from 17 to 12, 8, 5, and 4 fathoms, with overfalls of 4 or 5 fathoms at a cast: and be careful to observe the ebb-tide, which sets right over the reef very strong; for the tide would very soon have set us near to where the Panther was, had we not ~~+~~ed as we did.

Pedro Branco bearing SWbS. about 4 leagues, you are clear of the reef; and, for a long and safe leading mark, keep Bintang Hill SbW½W. which will lead you clear of the reef, in no less than 15 or 16 fathoms. By steering to the north-eastward, the water deepens fast to 20 and 25 fathoms.

Pedro Branco, by a good observation, lies in latitude 1° 20' N. and bears from Bintang Hill NbW. about 5 leagues. From Pedro Branco to the outermost
part

part of the reef, the course is NEbN. 4 leagues; and when Bintang Hill bears SbW½W. 6 or 7 leagues, in 15 or 16 fathoms, ouzy ground, you are without the point of the reef, and may then steer NNE. or NbE. for Pulo Auroe (or rather Auore, or Aor), the water deepening fast to 20, 24, and 25 fathoms. Bintang and Barbuçet Hills bear from each other NWbN. and SEbS. 10 or 12 leagues.

In the NE. monsoon the flood runs strong into the straits, through the narrow passage between the Romania Rocks and Pedro Branco (SW. without, and WSW. in the narrow passage), frequently for 12 hours together, and sometimes longer, when it blows fresh; but in the SW. monsoon the ebb tide runs longest to the ENE. and NE. over the reef, at the rate of 4 knots. The time of high water, at full and change, is uncertain; only in the SW. monsoon it flows nearest north or south, or 12 hours; but in the NE. monsoon it has great dependence on the winds.

Pulo Aor lies from Pedro Branco NbE. 24 or 25 leagues, and from Bintang Hill N½E. 30 leagues; and after you have passed the reef off Point Romania, there is no danger, only a funken rock, that lies south from Pulo Aor 7 or 8 leagues, which you will take care to avoid. You have soundings between the Point of the reef off Point Romania and Pulo Aor, from 16 or 18 to 25 or 30 fathoms; and when Pulo Aor bears from WIN. to W½S. 5 or 6 miles, you will have 35 fathoms. The current here, in the SW. monsoon, is found constantly to set N. and NbE. 1 ½ knot.

Pulo Aor is high land, making in two hills like a saddle; the easternmost the highest; when they bear NW. they are shut in one. The south part of this island lies in latitude 2° 29' N. as observed when lying at ⚡ there.

Pulo Tingey, on which there is a very high peak (like a sugar loaf), lies from Pulo Aor WbS½S. distance 6 leagues; as does Pulo Pisang NWbN. 3 or 4 leagues. Pulo Aor bearing NW. 11 or 12 leagues, you have 36 fathoms, ouze; NW½W. 4 leagues 34 fathoms; ouze; WNW. 2 leagues, 34 fathoms, mud; WNW½N. 5 miles, 34 fathoms WIN. 4 or 5 miles, 34 fathoms, mud; WSW½S. 4 leagues, 36 fathoms; ouze; WSW. 8 or 9 leagues. 38 fathoms, clay; SW½S. 6 or 7 leagues, 38 fathoms, ouze; WSW½S. 6 or 7 leagues, 37 fathoms, ouze; SW½W. 8 leagues, 38 fathoms, mud; and SSW. 13 or 14 leagues, 38 fathoms, mud. Pulo Aor bearing from WSW. to WNW. distance from 4 to 6 or 7 miles, you have 34 fathoms, mud; the same bearings, about 4 leagues distance, you have 36 fathoms. ouze; and at 6 or 7 leagues distance, 37 fathoms, ouze, mixed with sand and broken shells.

You

You sail to the eastward of these islands in soundings from 30 to 40 fathoms. Pulo Timoan bearing WbN $\frac{1}{2}$ N. 6 leagues, Pulo Pisang WSW. 3 or 4 leagues, and Pulo Aor S $\frac{1}{2}$ E. 4 leagues, you have 34 fathoms, mud and clay. Pulo Timoan bearing WNW $\frac{1}{2}$ W. 8 or 9 leagues; Pulo Aor WbS $\frac{1}{2}$ S. 6 or 7 leagues; and Pulo Pisang W $\frac{1}{2}$ N. you have 36 fathoms, green ouze, mixed with coarse sand and broken shells. Pulo Timoan WbN. 12 or 13 leagues; Pulo Aor SWbW $\frac{1}{2}$ W. 9 or 10 leagues; the Anambas Islands from the mast-head ESE. 13 or 14 leagues, 37 fathoms, ouze. Pulo Timoan W. 8 or 9 leagues, the Anambas seen at the mast-head from NE. to ENE. 36 fathoms, ouze, mixed with sand and broken shells; Pulo Timoan SWbW. 8 or 9 leagues; Pulo Pisang SWbS. and Pulo Aor SSW. 13 or 14 leagues, 38 fathoms, mud.

From Pulo Aor to Pulo Timoan, the course is NNW $\frac{1}{2}$ W. distance 9 leagues. The depth of water between them, from 36 to 30 fathoms. Pulo Timoan, the northernmost of these islands is a large and high mountainous island, covered with trees, and lies in latitude 2° 50'N. and longitude 103° 43'E. from London. There was no variation at this island 1763.

From Pulo Timoan to Pulo Condore, the course is N19°E. 122 leagues. You have soundings all the way between these islands; particularly Pulo Timoan WbS. 5 leagues, you have 35 fathoms, and SbW $\frac{1}{2}$ W. 15 or 16 leagues, 40 fathoms, ouzy ground; in latitude 4° 2'N. and meridian distance 23'E. from Pulo Timoan, 42 fathoms, sand and ouze; from thence to latitude 5° 24'N. meridian distance 49'E. from 42 to 40 fathoms, sand, mud, and ouze; from thence to latitude 6° 49'N. and meridian distance 1° 18'E. from 40 to 38, 35, 30, and 27 fathoms, mostly sand, sometimes with ouze; from thence to latitude 7° 30'N. meridian distance 1° 35'E. from 27 to 25 and 22 fathoms sand; from thence to latitude 8° 18'N. meridian distance 2° 18'E. from 21 to 19 and 21 fathoms, coarse brown sand: when Pulo Condore bore from NbW to NbE $\frac{1}{4}$ E. 8 or 9 leagues, had 19 fathoms; and at noon, when the body of it bore NW $\frac{1}{2}$ W. 7 or 8 leagues, had 21 fathoms. The variation little or none, nor any current worth speaking of.

Pulo Domar lies due east from Pulo Pisang, in latitude 2° 43'N. and is about the height of a large ship's main-top out of the water, and about 3 times as big as a large ship's hull; the sides of it appear to be steep or rather perpendicular, and look very white when the sun shines upon it. This island lies in the fair way between Pulo Pisang, or Pulo Aor, and the Anambas, but nearest the latter; and, to all appearance, bold to, and no danger near it.

Pulo Domar bearing NE. Pulo Pisang $W\frac{1}{2}N$. Pulo Timoan NW. and Pulo Aor $WbS\frac{1}{2}S$. distance about 10 leagues, you have 38 fathoms, ouze.

The Anambas are a cluster of small islands, some of which are pretty high, and may be seen 9, 10, or 11 leagues; the body of them lie about due east from Pulo Aor, distance about 21 or 22 leagues. One of the Anambas in sight, from the deck, bearing $EbS\frac{1}{2}S$. 10 or 11 leagues, you have 40 fathoms, ouze, mixed with sand and broken shells.

The soundings between the Anambas and Pulo Aor, are very regular; and the sort of soundings so much alike, that a man cannot easily direct himself by them, only in regard to the depth; for the ground is generally ouzy, as you may see by the above particulars, off Pulo Aor. Mid-channel, between Pulo Aor and the Anambas (i. e. about 10 or 11 leagues) to the eastward of Pulo Aor, you have 38 fathoms, ouze. If you are nearer the Anambas than Pulo Aor, you will have 40 fathoms, ouze; then you may see the Anambas in clear weather. If you can keep in 35, 36, or 37 fathoms, you will be in the fair way, and pass 4, 5, or 6 leagues to the eastward of Pulo Aor.

The Natunas are a cluster of small islands to the north-eastward of the Anambas, and not far from them; some of them are pretty high, and may be seen 9 or 10 leagues; the northernmost of them lies in about latitude $4^{\circ}N$.

In the months that the monsoons shift in, the currents run very strong among the Islands Timoan, Pisang, Aor, and between them and the Anambas; they are very changeable, setting, at the latter end of September, or beginning of October, for several hours together, to the SSW. and $SWbS$. $1\frac{1}{2}$ or 2 knots per hour; and, after ceasing for some time, they will set to the southward, at the rate of 1 knot, and then SSE. SE. and ESE. and sometimes to the NE. $1\frac{1}{2}$ knot, for several hours together; then they will cease again for some time, and set to the S. and SSW. as before.

In the month of April, when the monsoons shift again, the current runs as fast to the northward, from NbW . to NNE. and NE. at the rate of 1 or $1\frac{1}{2}$ knot, and sometimes 2 knots. Those who come this way in the foresaid months, and in hazy weather, or the night time, must have great regard to the currents, or they will be much deceived.

In the other months, after the monsoon is set in, the currents are pretty regular and constant, in both monsoons. In the SW. monsoon, the current, from Pedro Branco to Pulo Aor, &c. sets NbE . or NNE. about 1 knot. At Pulo Aor, and between it and the Anambas, the current sets N. and NbE .

$1\frac{1}{2}$ knot;

1½ knot; and so to the north part of Pulo Timoan. From Timoan, for 20 leagues to the northward of it, you will have a current setting NbE. about 1 knot; then the current ceases; and you find little or no current afterward, as you sail to Pulo Condore, Pulo Sapata, or all over the China Seas, in either monsoon, except at the time of the shifting. In the NE. monsoon the currents set just the contrary way, at much the same rate.

Being the length of Pulo Aor, or Pulo Timoan, there is a necessity of making Pulo Condore, for the greater certainty of making Pulo Sapata, and to avoid the Middleburgh Shoal.

Pulo Condore is an high and mountainous island, or rather number of islands, of which Condore is the largest and highest, and the only one, it is said, that is inhabited. These islands lie about east and west, 14 or 15 miles in length, and appear at a distance in a number of hummocks; but as you approach nearer, these hummocks soon appear to be a number of very high hills or mounts. This island may be seen in clear weather 16 or 17 leagues. It is seen bearing NbE½E. 14 leagues, in 20 fathoms water.

Pulo Condore is a place where the generality of ships take their departure from, when bound into the Chinese Seas, or coming out of them; its latitude is 8° 40' N. and longitude 106° 32' E. from London. The variation, by several observations off this island, in September 1762, was 16° W.

Pulo Condore bearing NbE½E. distance 16 or 17 leagues, (at which bearings and distance it may be seen in clear weather) you will have 20 fathoms, fine white sand, with black specks; NNE. 9 or 10 leagues, 20 fathoms, fine white sand; NbE. 4 or 5 leagues, 19 fathoms, ditto; NW. 7 or 8 leagues, 21 fathoms, ditto; W. 10 leagues, 22 fathoms, ditto; W. 12 leagues, 24 fathoms ditto; WbS½S. 22 leagues, 28 to 30 fathoms, fine grey sand; WbS½S. 25 or 26 leagues, 37 fathoms, fine dark-coloured sand; WbS½S. 30 or 31 leagues, 42 fathoms, ditto; and WbS. or WbS½S. 40, 41, or 42 leagues, 48 or 50 fathoms, fine grey sand; and you will have no soundings to the eastward of this.

Being to the eastward of Pulo Condore, in latitude 8° 40' N. and in 20 fathoms water, you will be sure to see it, bearing W. 6 or 7 leagues, unless the weather is very hazy. You may depend upon seeing it, in clear weather, from the following soundings; in 22 fathoms you may see it bearing W. 10 leagues; in 24 fathoms, W. 12 leagues. If you are sure of your latitude and soundings, you may depend on the distance above-mentioned, should the weather prove so hazy that you cannot see it.

Being 7 or 8 leagues off Pulo Condore, in 20 fathoms, or 9 or 10 leagues from it, in 22 fathoms, and intending to see Pulo Sapata, you must steer NE½E. this will carry you far enough without it; or NEbE. this will carry you but just in sight of it, in clear weather. You have soundings all the way between them. Pulo Condore bearing NW. 7 or 8 leagues, we had 21 fathoms, fine white sand, with some black specks; then steered NE½E. 84 miles, deepened our water gradually from 21 to 28, 32, 36, and 42 fathoms, grey sand and shells; thence steered NE¼E. 31 miles, deepened our water to 47 and 55 fathoms, coarse grey sand, and to 72 fathoms, clay and sand; continuing the same course, soon after had no ground, 90 fathoms: then hauled in to the northward 10 miles, and had soundings 72 fathoms, coarse grey sand; steered north 5 miles, and had 52 fathoms.

Pulo Sapata bearing NE½E. 8 or 9 leagues, had 42 fathoms, coarse grey sand, with some small stones and black specks, like pepper corns; Pulo Sapata, NEbE. 10 leagues, and the westernmost Catwick, NNE¼E. 7 or 8 leagues, had 52 fathoms, fine brown sand; Pulo Sapata, ENE. 8 leagues; and the westernmost Catwick, NE. 6 leagues, 46 fathoms, fine grey sand; Pulo Sapata, NE. 9 leagues, 96 fathoms, mud and sand; NNE. 8 or 9 leagues, 78 fathoms, ouze: here the current set SSW. 2 knots and 3 fathoms, the latter end of September.

Pulo Sapata, NbE½E. 9 leagues, 72 fathoms, ouze; NbE¼E. 5 leagues, 70 fathoms, ouze and white sand; NbE½E. 7 miles, 75 fathoms, ouze; NbE. 4 leagues, 80 fathoms, ouze; NbE. 7 or 8 leagues, 85 fathoms, mud and sand; NE½E. 7 leagues, and the westernmost Catwick, NbE¼E. 8 leagues, 62 fathoms, ouze and sand; the westernmost Catwick, NNE. 7 or 8 leagues, 71 fathoms, ouze and sand.

By this it appears, that there are regular soundings all the way between Pulo Condore and Pulo Sapata; that the water deepens fast as you come near Pulo Sapata; and that the bank goes off suddenly from 85 to 90 fathoms, and no soundings.

When Pulo Sapata bears about NbE. you are then going off the bank; at that bearing 7 or 8 leagues, you have 85 fathoms; this is the edge of the bank: a very little to the eastward or southward thereof, you have no sounding; which shews that there are no soundings to the eastward of Pulo Sapata, and that there is deep water very near it.

In or near the latitude of Pulo Sapata, if you have under 48 fathoms, you are to the westward of it; if you have 52 fathoms in the stream of Pulo Sapata,

in

in the fair-way between it and Pulo Condore, it will bear from ENE. to NEbE. 10 leagues; if you have from 70 to 85 fathoms, you are to the southward of Pulo Sapata, and near the edge of the bank; and Pulo Sapata then bears from NbE. to NNE. from 4 to 8 leagues; therefore, being in the latitude of Pulo Sapata, and no soundings, you may be sure you are to the eastward of it.

Pulo Sapata lies in latitude $9^{\circ} 54' N.$ and longitude $108^{\circ} 15' E.$ from London, bearing, from Pulo Condore ENE $\frac{1}{2}$ N. distance 48 leagues. This is a pretty high and rocky island, which may be seen in tolerable clear weather 9 or 10 leagues. Most ships bound to China endeavour to make this island, and also in their return from thence. To the north-westward of this island, and some distance from it, lie two other islands, called the Catwicks; these also are pretty high, and may be seen 7 or 8 leagues in clear weather.

CCC. DIRECTIONS for Ships bound to MANILLA, crossing the CHINA SEAS.

From Pulo Sapata, being bound to Manilla, shape your course about NE. or so as to be sure to get into latitude of $12^{\circ} \frac{1}{2} N.$ until you make 4 degrees easting; for in latitude $11^{\circ} 30' N.$ and longitude $4^{\circ} E.$ from Pulo Sapata, lie 2 dangerous shoals; these were seen on board his Majesty's ship South-Sea Castle, on her passage from Pulo Sapata to Manilla, 1762, according to the following extract from the ship's log-book.

At day-light, in the morning, saw two low sandy islands a-head, lying SW. and NE. of each other: the distance between them 2 or 3 leagues. The northernmost bore NNW. and had an high tree on it; the southernmost bore NWbW. distance 7 or 8 miles: latitude in, by account at that time, $11^{\circ} 30' N.$ and longitude, made from Pulo Sapata, $4^{\circ} E.$ Pulo Sapata, by estimation, $S68^{\circ} W.$ distance 97 leagues; sounded, no ground.

Also the same year a country ship, named the Sabut Jung, from Bengal to Manilla, remarks, that between Pulo Sapata and the Island Cabra, or Luban, is a low island, almost in the fair-way, which must be avoided by sailing to the northward, thereof; few or none lay it down in its true latitude, which is $11^{\circ} 28' N.$ and meridian distance from Pulo Sapata, $5^{\circ} 12' E.$ It is so low, that we did not see it till within 3 miles of it, in clear weather. To the westward it appears clear, but to the eastward is a low sandy bank; and about 7 leagues to the eastward of the island is a shoal, on which we had only 8 fathoms water.

These

These might be the same, as their latitude is so much alike; though $1^{\circ} 12'$ difference in their supposed longitude. From latitude $12^{\circ} \frac{1}{2}$ N. to $13^{\circ} 50'$ N. you may steer to the eastward with great safety, in order to make Cabra, or Goat Island.

The Island Cabra, or Goat Island, is a low, flat, rocky island, seemingly steep to on all sides; it is about 9 or 10 miles in length, and near as much in breadth, being almost round; and may be seen from a ship's deck 6 or 7 leagues. The latitude of this island, by observation, is $13^{\circ} 56'$ N. and longitude $119^{\circ} 13'$ E. from London, according to Mr. Nichelson. No variation (by several observations) off this island 1762. When this island bears SEbE. it is then on with the Island Luban, which, being very high and mountainous, may be seen 17 or 18 leagues. Navigators commonly begin and end their reckoning at this island.

As you sail from Goat Island, toward the Island Mirabelle, or Corigedore, you will see the Island Fortune, which is a small, but high, rocky island, bearing from Corigedore SbW $\frac{1}{2}$ W. 5 or 6 leagues. You leave this island on the starboard side, and passing it about 3 leagues to the westward, will have no soundings, till you come within 2 or $2\frac{1}{2}$ leagues of Corigedore; thereabout you have from 45 to 50 fathoms, sandy ground. Keeping on toward Corigedore, you shoalen your water gradually to 40, 35, 30 fathoms; and about 2 miles to the westward thereof, you have 26 or 27 fathoms.

As you near Corigedore, you will see a rock like a sail, which lies about half way between it and the south shore, bearing from Corigedore SEbS. about 2 miles; it is steep to on all sides. You have 20 fathoms within a quarter of a mile of this rock; and from 20 to 24 fathoms between it and Corigedore; and between the rock and the south shore, there are from 20 to 17 fathoms within a quarter of a mile of the shore, all clear, sandy ground, and no danger but what you see.

There is also another rock, called the Haycock Rock (from its great resemblance thereunto) bearing from Corigedore W $\frac{1}{2}$ S. about $2\frac{1}{2}$ miles; it is pretty high and steep to on all sides, having 27 fathoms within a quarter of a mile all round it. Between this and the north shore, you have regular soundings, from 27 to 28, and 20 fathoms, a quarter of a mile from the shore, fine, clear, sandy bottom: between it and Corigedore, from 27 to 22, to 29 and 30 fathoms; the nearer the NW. part of Corigedore, the deeper the water.

There is a rock with an hole in it, which you may see through; it lies a very small distance off the NW. or W. part of Corigedore; within a cable's length thereof,

thereof, you have 30 fathoms. A-breast of Corigedore, mid-channel between it and the north shore, you have 26 fathoms; the nearer Corigedore, the deeper the water; deepening from 26 to 36, 48 and 52 fathoms, within a quarter of a mile of the island. On the other hand, it shoalens quickly from 26 fathoms, mid-channel, to 16 or 15 fathoms, within a quarter of a mile of the north shore, hard stony ground.

Being in 45 or 50 fathoms, 2 leagues, or thereabout, to the westward of Corigedore, steer directly for that island; and if you have a fair wind, the common passage is between the Haycock Rock and Corigedore, and so between it and the north shore, keeping Corigedore on the starboard side.

The Island Corigedore, or Mirabelle, is a pretty high and large island, near the entrance of Manilla Bay, but rather nearest the north shore, lying in latitude $14^{\circ} 24' N.$ and longitude $120^{\circ} 25' E.$ from London, and bears from Goat Island $NE\frac{1}{4}E.$ distance 15 leagues. There is plenty of good fresh water near the west part of this island, under a very high, steep cliff, about $\frac{1}{4}$ of a mile from the rock with an hole in it; but it is bad landing on a stony beach, though the water is always smooth.

From Corigedore the course to Manilla is $ENE\frac{1}{4}N.$ distance 11 leagues; and to Caveta $EbN\frac{1}{4}N.$ 8 or 9 leagues. In this passage you must be very careful of a dangerous shoal that lies in the fair way, called St. Nicholas's Shoal, which has but 11 feet on the shoalest part of it, and is steep to. On the outer part of this shoal, the NW. part of Corigedore bears $W13^{\circ}S.$ Caveta Church, $E17^{\circ}N.$ and the extremes of the land about Caveta, $E23^{\circ}N.$ here are but 11 feet water, and within a ship's length to the north-westward thereof, you have 13 or 15 fathoms, being so steep to, that no one can tell when he is near it by his soundings; therefore have a strict regard to the leading marks, viz.

As you steer to the eastward of Corigedore for Manilla, or Caveta, keep the N. or NW. part of Corigedore WSW. till you bring Caveta church steeple to bear E. and a remarkable hummock, close to the sea, on a point of land, on the north shore, $WNW\frac{1}{4}N.$ you are then clear of St. Nicholas's Shoal, and may steer for Caveta, or Manilla, at your pleasure. You have soundings between Corigedore and the north shore, 26 fathoms; between St. Nicholas's Shoal and the north shore, in the fair way, 17 and 18 fathoms (shoalening gradually toward the north shore, to 5 and 4 fathoms); and as you steer to the eastward, you will shoalen your water gradually from 17 to 14, 12, 10, 8, 6, and 5 fathoms, in which depth you may \rightarrow in safety off Caveta, the flag-staff
SIW.

SW. a low point of land, called Shingley Point, and Corigedore, in one, WIS. distance from Caveta a large mile, the bottom muddy, and good holding ground.

Being to the westward of the Island Corigedore, with the wind easterly or ENE. which is right out of Manilla Bay, it is best to go through the fourth channel, between Corigedore and the fourth shore; there being more room for a ship to turn to windward, and no danger but what may be seen; the fourth shore being bold, and clear of all danger. The nearer to Corigedore, the deeper the water on all sides: but you must carefully observe the following remarks.

1st, When you are got a-breast the easternmost high land, on the fourth shore, which bears from Corigedore SE½E. you must be careful how you stand toward the fourth shore; for the tail of St. Nicholas's Shoal trenches away gradually toward the above-mentioned high land; and you will sometimes shoalen your water suddenly from 12 to 6 or 7 fathoms, hard, rocky ground; therefore it is adviseable to stand in to no less than 12 or 13 fathoms; and as you get further to the eastward, not to stand in to less than 15 or 16 fathoms; for you may have 15 fathoms at one cast, and 7 or 6 fathoms the next cast, and then 4 fathoms, which is on the edge of St. Nicholas's Shoal.

2d, To weather away the east part of Corigedore as soon as you can; you will have 22 or 23 fathoms within half a mile of it. When you can weather it, stand over for the north shore, and keep working up along that shore (which is bold to), having in most places 15 or 16 fathoms a quarter of a mile off shore, and 10 or 12 fathoms at a cable's length off shore, though it shoalens very suddenly from 15 to 10, 7, and 5 fathoms in some places; nor is there any danger but what may be seen.

After you are past Corigedore, the north shore has a clear, sandy bottom, and good anchorage. As you go more to the eastward and northward, you will find the north shore more flat, and the soundings more gradual, having 17 or 18 fathoms three quarters of a mile off shore, and 12 fathoms half a mile off shore, shoalening gradually from 12 to 10, 8, 6, 5, 4, and 3 fathoms, close in shore. As you stand to the southward, be careful to avoid the St. Nicholas Shoal, according to the leading marks above given to carry you clear of it.

In Manilla Bay there is a tide, which ebbs and flows about 3 feet perpendicularly. It is not regular in the bay; and about Corigedore it runs strong
to

to the westward for 24 hours together, especially with the wind easterly; then it ceaseth for 4, 5, or 6 hours, and then runs strong to the westward again; between Corigedore and the north shore, the tides run out for 18 hours together to the westward, pretty strong, and then turns and runs as strong to the eastward for 6 hours, in which time the water has flowed to its full height. The tide runs to the westward 18 hours out of the 24; and sometimes the flood, and one ebb; and it flows as much in 6, as it ebbs in 18 hours; but the time of high water is not ascertained.

Caveta is properly the sea-port to Manilla, though it is a town and garrison itself. It is situated on a low point of land, which forms a safe and excellent harbour, though rather too shallow, having no more than 18 or 19 fathoms in the deepest part of it, the bottom soft mud; great ships may lie in safety in Caveta Road, and be well sheltered from the SW. and W. winds.

Here the Spaniards have a very good marine yard, well stored with all kinds of naval stores; build their galleons or other ships, and have excellent conveniences for heaving ships down, and repairing them, at which they are very dextrous. It is fortified by sea and land; at the extreme point of it there is a square battery, with 10 guns in the faces, to the N. and NE. in order to defend the entrance of the harbour; it has also a citadel with 4 bastions, &c. which form nearly a square; this is called Fort St. Philip. The marine yard extends from the extreme point to this port, and the town from hence to the gates; it is defended toward the land by two round towers, with 10 pieces of cannon each, and a wall with a parapet from one to the other; in the middle whereof is the land gate, before which is a wet ditch, formed by the sea, and a draw-bridge across it: without this gate there is a narrow neck of land, (the narrowest part of which is not more than 32 yards over); for about $\frac{1}{2}$ a mile, which adds greatly to the strength of this place by land; it has likewise two other batteries to the seaward, one of 14 guns, and the other of 8 guns.

There is no good water in Caveta, though there are many wells with plenty of water; but it is all blackish; the Spaniards neither using it for drinking, nor dressing of victuals. They send for their water up their river, by Old Caveta, where they get very good water; but that river is not navigable, even for boats, only at high water; and is commanded by the fortifications at Caveta.

Manilla lies from Caveta NNE $\frac{1}{2}$ E. about 3 leagues, and no danger between them; the soundings are regular, from 5 fathoms, at Caveta, to 6, 7, 8, and 9 fathoms, half way to Manilla; and they shoalen gradually to 8, 7, 6, 5,

M m m

and

and $4\frac{1}{2}$, or 4 fathoms off Manilla. If you have occasion to turn between hem, you may stand in shore, any where between them, to 5 or $4\frac{1}{2}$ fathoms, the shores being very flat; they shoalen very gradually every where; all clear ground, and muddy bottom.

You lie in a good birth in Manilla Road, with the following bearings, viz. the fishing stakes, at the river's mouth, $N18^{\circ}E$. the north bastion, $N37^{\circ}1E$. the cupola, $E37^{\circ}N$. the SW. bastion, $E20^{\circ}N$. in 5 fathoms water, 1 mile from Manilla. The Spanish ships very seldom \rightarrow off Manilla, but generally in Caveta Road, or Harbour.

Manilla (the principal Spanish settlement, and seat of a superior governor-general over all the Phillippine Islands) is a spacious city, situated on the Island Luconia, in latitude $14^{\circ}36'N$. and longitude, by astronomical observation made there by the Spaniards, $120^{\circ}50'E$. from London; the variation, by several observations, was $36'W$. 1763. This city lies on the south side of the entrance of the Rio de Pasig, and is encompassed with a good wall, fortified with bastions, &c. but the works, though regular on the S. and E. sides, are irregular on the N. and W. sides, as they follow the shape of the river and bay.

The situation of Manilla, and the safe port of Caveta, make it a convenient place for trade; but, notwithstanding these advantages, there is not much trade carried on there, considering the largeness of the city, and number of its inhabitants. They have 3 galleons, which pass and repass annually between this place and Acapulco, bringing immense treasures from the latter; and this is their chief dependence. These sail from Acapulco in March or April, and arrive at Manilla in about August or September. They have also about 5 or 6 sail of other vessels, that trade to China and Batavia; and they have 4 sail of row-gallies, which are armed vessels, to guard the coast and islands adjacent.

The air at Manilla is very unwholesome, during the months of June, July, and August, being very close and humid, and subject to great vapours and fogs, occasioned by the vigorous vegetation from the low, level swampy lands, near to and around the city, for several miles; whereby fevers and fluxes are very rife, and some years carry off great numbers of the inhabitants. The muskatoes also are very troublesome in these months.

Wood is a very scarce article, both here and at Caveta; there being none to be had but what is brought down the rivers from the inland parts in country

country boats. The river at Manilla is very good water; you go up it to the bridge, and fill your casks in the boat. If your ship is in Manilla Road, you may water with great expedition; but this river is entirely commanded by the garrison of Manilla.

CCCI. DIRECTIONS *for* SAILING *from* MANILLA *to the* STRAITS *of* SINGAPOUR *and* MALACCA, *in the* NORTH-EAST MONSOON.

The method generally taken to make a passage from Manilla to the Straits of Malacca is, on leaving the Bay of Manilla, to steer for the Island Cabra, or Goat Island. The course is SW $\frac{1}{4}$ W. distance 15 leagues. You take your departure from Goat Island, and steer to the westward, so as to go to the northward of the islands, or shoals, seen by the South-Sea Castle and the Sabut Jung, as before-mentioned; and when you are to the westward thereof, steer for Pulo Sapata, endeavouring to get sight of it. If Sapata is not seen, and you are certain you are to the southward of it, haul in to the westward, and endeavour to get soundings, which you will soon have at 40, 45, 48, or 50 fathoms, fine grey sand, in latitude 9° 10'N.

After striking soundings, you may steer WbS. for Pulo Condore; and in so doing, you will shoalen your water, in the distance of 17 or 18 leagues, from 50 to 37 fathoms, fine grey sand, in latitude 8° 57'N. Continuing that course 13 leagues further, you will shoalen your water to 24 fathoms, fine white sand in latitude 8° 45'N. and if it is clear weather, you will see Pulo Condore very plain, bearing about W $\frac{1}{4}$ S. 11 or 12 leagues. If the weather is hazy (as it frequently is in the NE. monsoon), it matters not your going nearer Pulo Condore; you may depend on your bearings and distances therefrom in that latitude and depth of water, and may haul to the southward for Pulo Timoan, or Pulo Aor.

You may steer SSW $\frac{1}{4}$ W. or SWbS. till you are in latitude 7° 20'N. and you will have soundings from 24 to 21 and 22 fathoms, fine white and grey sand. From thence steer SSW. or SSW $\frac{1}{4}$ W. till you are in latitude 5° 44'N. and you will have soundings from 22 to 26, 32, 34, 39, and 40 fathoms, soft muddy ground. From thence you may steer SSW. SSW $\frac{1}{4}$ W. or SWbS. till you are in latitude 5° 9'N. and you will have soundings from 40 to 42 and 44 fathoms, blue clay and mud. From thence steer SbW $\frac{1}{4}$ W. till you are in latitude 3° 20'N. and you will have soundings from 44 to 40, 35, and 30

M m m 2

fathoms,

fathoms, coarse gravel, sand, and shells; in this latitude and depth of water you may see Pulo Timoan bearing S. 7 or 8 leagues, and Pulo Pisang, SbE $\frac{1}{2}$ E.

At the latter end of September, or beginning of October, off Pulo Sapata, the Catwicks, and thereabout, you will find very strong currents setting different ways, and running much stronger at some times than others. When it runs strongest (which is about 2 $\frac{1}{2}$ knots), it generally sets to the southward, from SbW. to SbE. for several hours together: then it will slacken, and run to the SSW. at the rate of 1 $\frac{1}{2}$ knot; then run SW. at the rate of a knot, for some time; and then run to the S. and SSE. at the rate of 2 and 2 $\frac{1}{2}$ knots, as before.

From Pulo Sapata to Pulo Condore, the current sets from S. to SW. and WSW. at the rate of 1 $\frac{1}{2}$ or 2 knots; and from Pulo Condore to Pulo Timoan, from S. to SSW. about 1 $\frac{1}{2}$ knot.

At the SW. point of Pulo Timoan there are three very remarkable high peaks, two of which are called the Asses Ears, from the resemblance they have to the ears of that animal; which cannot escape the notice of those that make this island. Those who would \rightarrow here, coming from the northward, must go to the westward of Pulo Timoan, between it and a small island that lies to the westward of the north end of Pulo Timoan. The channel between them is about a league broad, and has 24 fathoms, mid-channel.

You keep about 1 $\frac{1}{2}$ or 2 miles off the west shore of Pulo Timoan, in soundings from 28 to 17, 18, 20, and 22 fathoms, small stones, sand, and shells. The best \rightarrow age is in a sandy bay at the SW. part of the island, where it shoalens gradually from 22 to 10 and 9 fathoms, sand and gravel, clear of rocks and foul ground. You have a good birth in 15 or 16 fathoms, with the SW. point of the island bearing about ESE. the bight, or middle of the sandy bay, NNE $\frac{1}{2}$ E. and the north-westernmost part of the island in sight about NNW.

There are no houses hereabout, nor the least sign of inhabitants, though there are great numbers on the island; but no kind of refreshments to be got here. There are two very good watering-places in this bay; the one, a river on the east side, where boats may fill their casks with great ease; but it has a bar, which prevents their going in or out at low water: the other is at a large constant running stream on the west side of the bay, where you may fill at all times: at either of them the water is very good. Here is also plenty of fire-wood

wood for cutting, near the shore. The tides are regular here, flowing, on the full and change, E. and W. or 6 hours: the flood sets to the NNW. and the ebb SSE. at the rate of $1\frac{1}{2}$ knot; and flows perpendicularly by the shore 8 or 9 feet.

From the above station, by steering SSE. for Pulo Aor, you will deepen your water from 30 fathoms, coarse gravel, sand, and shells, to 35 and 36 fathoms, coarse sand, when Pulo Aor bears W. 5 or 6 miles: and, as it is extremely dangerous to approach the mouth of the Straits of Sincapour, except the weather be clear, therefore ships generally \rightarrow under Pulo Aor, in a fine bay on the SW. side, where they lie till the weather clears.

Pulo Aor is a small, but high and woody island. At the SW. part thereof is a small, but deep round bay, which makes a most excellent road, where you lie sheltered from all winds, between NNE. and ESE. and as smooth as in a mill-pond, though there runs ever so high a sea without: this is occasioned chiefly by a small rocky island, which lies a small distance to the westward of the north end of Pulo Aor, and breaks off the violence of the swell from the NE. You may run so far into the above bay as to shut in $\frac{1}{2}$, $\frac{3}{4}$, or the whole, of the rocky island, with the NW. point of the bay, and \rightarrow in 20 to 15 fathoms, coarse sand, and all clear ground.

All ships coming from the northward, that intend to \rightarrow in Pulo Aor bay, should go to the westward of the island, in order to fetch into the bay, which they will not be able to do if they go to the eastward. The watering-place, which is a running stream, is on the north side of the bay, close to the sea: and here is plenty of wood for cutting. There are a great number of houses in the bay, and many inhabitants, who are very shy; yet there are little or no refreshments to be got here, except cocoa-nuts and mangoes; the latter the worst sort of their kind. The tides here ebb and flow about 6 feet perpendicularly.

When the weather appears clear and settled, weigh about midnight, in order to be near the straits mouth in the morning, and make sure of getting into the straits before night or thick weather comes on, which would put you to your shifts, and expose you to great danger. From Pulo Aor steer SbE, or SbE!E. in order to avoid the sunken rock that lies south, 6 or 7 leagues therefrom; then steer S. SbW. or SSW. The course from Pulo Aor to Pedro Branco, in latitude $1^{\circ} 20' N$ is SbW. 24 leagues. You will have soundings between them, in the fair way near Pulo Aor, 30 fathoms, and as you run to the southward, 27, 24, 20 fathoms, sandy ground. Keep in 20 fathoms till shoaling

shoalening near the reef off Point Romania to 16, 15, or 14 fathoms. This shoal runs a great way out, and is dangerous to approach, on account of the irregular soundings on it: therefore come no nearer it than 14 or 15 fathoms. In that depth you will just see the low land of Point Romania from the deck. For a leading mark to carry you clear of Point Romania Shoal, keep Bintang Hill SbW $\frac{1}{2}$ W. till you bring Barbucet Hill to bear W $\frac{1}{2}$ S. or W. (and in hazy weather W $\frac{1}{2}$ N.) and Point Romania WbS. 5 or 6 leagues; then you will see Pedro Branco bearing SW. SWbW. or WSW. In clear weather you may see it 4 leagues; but if hazy, not more than 2 or 3 leagues.

Here the tides run very strong both within and without the straits mouth; but in particular off the shoal of Point Romania, and about Pedro Branco, and that way. It runs the strongest in the NE. monsoon. It has been known to run at the rate of 3 or 4 knots for 10 or 12 hours together. The time of flowing is uncertain, and seldom answers calculation; so that it is not to be depended on.

As there is such a strong southerly current from Pulo Aor to the reef off Point Romania, and when you come off that and Pedro Branco, there is such a prodigious strong tide, for many hours together, as to be almost a constant current, setting mostly to the SSW. and SW. you see how dangerous it is for ships to be benighted, or taken in thick weather, off the mouth of these straits. Should this be your case, and you cannot see the mouth of the straits, push for the Straits of Dryon, provided it be early in the season, and enter the Straits of Malacca by the Carimons, but if it should be late in the season, then go for the Straits of Banca and Sunda.

If the weather is clear, steer for Pedro Branco; and, when you come near it, you will deepen your water from 14 or 15 to 20, 25, or 30 fathoms. Pedro Branco bears from the outermost rocks, or islands, off Point Romania, EbS $\frac{1}{2}$ S. 2 $\frac{1}{2}$ leagues. Between these is the channel, or entrance into the Straits of Sincapour: you have 20 fathoms near the reef, 25 fathoms mid-channel, and 30 fathoms near Pedro Branco.

When you have sight of Pedro Branco, bearing SW. or SWbW. steer so as to go 2, 3, or 4 miles to the northward of it; and when you bring Barbucet Hill on the outermost island off Point Romania, they will bear WNW. and you are clear of all the reef, and may keep mid-channel between Pedro Branco and the said island, and so enter the Straits of Sincapour.

Southward

Southward of Pedro Branco lie many rocks both above and under water, and all foul ground round about it. Take care not to go too near it; for the tides run very strong to the SSW. amongst the rocks and shoals about Pedro Branco; but pass it as above directed; should it be near night when a-breast of Point Romania, it is best to haul under the point in 18 fathoms, and \rightarrow for the night, taking day-light to go through the narrows.

Being past Pedro Branco, and a-breast Point Romania, the straits are wide, and no danger. From Point Romania St. John's Island lies WbS $\frac{1}{2}$ S. distance 13 leagues; you will have soundings in this channel from 18 fathoms, on the north shore, to 20 and 25 fathoms, mid-channel; and 30 fathoms on the south side the channel: steer WbS. for St. John's Island; and when you see it, keep it bearing WbS. as a good leading mark to carry you clear of all danger.

The south side of the Straits of Sincapour is foul ground, and shoal, abounding with many rocks above and under water: it is best therefore keeping on the north shore, in 18 or 20 fathoms, till you are up with, or a-breast, Johore or Joor River, off which lies a sand-bank; the marks for which have been already given. When you have passed this sand, the north side is all clear; but the south side still continues foul.

Being a-breast of St. John's Island your course to Barn Island is WbS. 4 leagues: you have irregular soundings, from 30 to 25, 20, and 18 fathoms, shoalening 5, 6, or 8 fathoms at a cast, and sometimes 10 or 12 fathoms; toward the south shore it deepens to 40 and 50 fathoms, and then shoalens again suddenly. St. John's Island is bold to, and you have good soundings from 20 to 15 fathoms very near it. If day-light, or the wind, fail you, it is best \rightarrow ing under St. John's Island in 15 or 16 fathoms, soft ground 1 or 2 miles off shore, the island bearing from WSW. to SWbW.

From St. John's Island SE $\frac{1}{2}$ S. lies a ridge of rocks plainly to be seen; and without them a shoal WbS. 2 leagues further. From St. John's Island SW $\frac{1}{2}$ S. 3 miles and from Barn Island EbS. 2 $\frac{1}{2}$ leagues there lies a single black rock above water, about the size of a ship's long-boat, and is $\frac{1}{2}$ of the channel from the south side of the straits. From Barn Island SEbS. 4 or 5 miles, there lies a ledge of rocks. Between these rocks and the Islands Rabbit and Coney is the channel, in which you have irregular soundings, between 20 and 30 fathoms, rocky ground.

You may pass the Rabbit and Coney, within $\frac{1}{2}$ of a mile, in 20 or 22 fathoms. Barn Island bears from St. John's WbS. about 4 leagues. The tides here run very

very strong as the islands lie; the flood EbN. and the ebb WbS. The time of flowing is uncertain. They run longest to the eastward in the SW. monsoon, and longest to the westward in the NE. monsoon.

When a-breast the Rabbit and Coney, you may see the tree on Tree Island bearing $W\frac{1}{4}S$. and Red Island SWbW. From hence to the west part of Barn Island you have soundings from 22, 20, 16, 15, 14, 12, 10, to $9\frac{1}{2}$ fathoms, on a gravelly bank, about $\frac{3}{4}$ of a mile to the westward of Barn Island, where it is adviseable to \rightarrow , if night be coming on, and take day-light to pass Sandy Island, on account of the uncertainty of the set of the tides, and the irregularity of the soundings.

From the south part of Barn Island, the north part of the Little Carimon bears $W\frac{1}{4}S$. $6\frac{1}{2}$ or 7 leagues; and the tree on Tree Island WbS. 5 or 6 miles; which tree also bears, from the north peak of the Great Carimon, $E\frac{1}{4}N$. Between Barn Island and Tree Island is the channel out of the Straits of Sincapour. You have soundings, mid-channel, between them, from 24 to 30 and 33 fathoms, and may stand toward Tree Island into 16 or 15 fathoms, but no nearer; and into 10 or $9\frac{1}{2}$ fathoms, toward Barn Island. You have soundings also off the west part of Tree Island, to the northward of it, 1, $1\frac{1}{2}$, and 2 miles, from 20 to 23, 26, and 27 fathoms; and as you go to the westward, you shoalen it to 20, 18 and 17 fathoms. Being a-breast Barn-Island, steer WNW. or NW. according as you have the winds and tide, observing the directions and leading-marks for going clear of Tree Island. Another leading-mark is, to keep the south part of Barn Island $E\frac{1}{4}S$. which will lead you clear of all danger from Tree or Sandy Island.

You have soundings from Barn Island, with these beatings, from 10 or 12 fathoms; near Barn Island, to 20, 25, or 30 fathoms, as far as the west part of Tree Island; and to the westward of that, in the fair way, from 24 to 20 and 17 fathoms, ouzy ground. Being past Tree or Sandy Island, steer for the middle of the opening between the Little Carimon and Tanjan-boulus; the course is about WbN.

From Tanjan-boulus to Pulo Cocob is NWbW. 3 or 4 miles. Pulo Cocob is hardly to be known for an island, till you are close up with it. From Pulo Cocob, Pulo Pisang lies $NW\frac{1}{4}W$. $5\frac{1}{2}$ or 6 leagues, and from the NE. point of the Little Carimon NNW $\frac{1}{4}W$. 8 or $8\frac{1}{2}$ leagues. You have soundings from Pulo Cocob to Pulo Pisang, in the fair way, from 17 to 18 and 20 fathoms; and as you come near Pulo Pisang, you will shoalen your water to 16 fathoms; for there is a flat, which runs off above a mile from this island. If the wind

is

is scant, you may borrow upon Cocob to 17 or 18 fathoms, and upon Pisang to 11 or 12 fathoms, about 2 or 2½ miles; neither should you keep a greater distance from it than 5 or 6 miles, on account of the bank on the opposite side of the channel. Between these 2 islands the Malaye coast is all flat and shoal water: therefore come no nearer it than 12 or 14 fathoms; nor bring Pisang to bear further to the westward than NW½N. nor stand nearer than 15 fathoms to the Sumatra side: under this depth it is foul ground and shoal water, particularly when the east point of the Carimon bears SE½E. 4 or 5 leagues, and the outermost of the Two Brothers is right on with it, distance about 3 leagues; and Pulo Pisang is N½E. 4 leagues: it shoalens suddenly from 15 fathoms, soft ground, to 9 fathoms, hard.

There is a bank off Pulo Pisang, which lies WNW. and ESE. 7 or 8 leagues in length; from the east part whereof Pulo Pisang bears ENE½E. or NE½E. distance about 3 leagues; and from the west part thereof, Formosa Hill bears NE½N. and Pulo Pisang EbS. 8 leagues, or just in sight.

On this bank the America was forced to ⇨ in 5 fathoms; she was steering NW½N. and they shoaled the water as quick as they could heave the lead one cast after another, from 14 to 10, 9, 7, and 5 fathoms, when they ⇨ed, and sent the boat to sound ¼ a mile round to the southward, and found no less than 5 fathoms hard ground; the north side of it deepened very quick to 19 fathoms. Pulo Pisang then bore E½N. 2 leagues; the NE. point of the Carimons, SE½S. 9 or 10 leagues; and Mount Formosa NNW½W. 8 or 9 leagues.

Between this bank and Pulo Pisang, the leading mark is to keep Formosa Hill NNW½W. and the Carimons, SSE½E. in between 22 and 24 fathoms, mid-chandel.

Being a-breast Pulo Pisang, in 11 or 12 fathoms, 2 or 3 miles distance, a NW. or NW½W. course will carry you clear of all danger, in soundings from 22, 20, 15, to 12 fathoms, ouzy ground. If you shoalen your water to 11 or 12 fathoms, keep more to the westward; if you deepen it to 20 fathoms, keep more to the northward. Mr. Nichelson run through this channel in the night, in the following manner, viz. At 8 P.M. was a-breast Pulo Pisang, the south part thereof bearing ENE½N. 2 or 3 miles, in 17 fathoms; passed by the island in 11½ and 12 fathoms; then steered NW. and NW½W. shoalened the water to 13 or 12 fathoms; kept NW½W. and having deepened it to 14½ or 15 fathoms, then steered NW.

From 8 P.M. to 2 A.M. made the course good NW½W. 7 leagues; had in that run soundings, from 12 to 15 fathoms; at 2 A.M. the wind scanted, by

N n n

coming

coming to the northward; from 2 to 6 A. M. the course made good was WNW $\frac{1}{2}$ N. 4 leagues, in soundings from 17, 20, 24, and 25 to 28 fathoms; then Pulo Pisang bore EbS $\frac{1}{2}$ S. 9 or 10 leagues, and Mount Formosa NNE $\frac{1}{2}$ E. 5 or 6 leagues. By this you see the above course may be depended on to carry you clear of all danger.

After you have passed Pulo Pisang, there is no danger on the north side till you come near Mount Formosa, off which there lies a shoal stretching about 2 leagues along shore; from the SE. part whereof Mount Formosa bears NEbN. and Mount Moora NWbN. and from the NW. part they bear E $\frac{1}{2}$ S. and NbW. This shoal lies pretty much out of a ship's track, they having no business so near in shore. The tides hereabout are very uncertain, but set longest and strongest to the westward and north-westward.

From Mount Formosa the coast runs NW. $14\frac{1}{2}$ or 5 leagues to Mount Moora, a single hill near the sea shore, the land near it being low, though in the country the land is very high and mountainous. Mount Moora bearing NbW. 5 or 6 leagues, and Mount Formosa, NE $\frac{1}{2}$ E. 3 or 4 leagues, in 23 or 24 fathoms, you may discern Pulo Pisang from the deck, bearing about ESE $\frac{1}{2}$ S. 9 or 10 leagues; and the outermost of the Water Islands, which are high, NW. about 10 leagues. Steer for the Water Island, in soundings from 20, 22, 24, 25, to 26 fathoms. In the offing you will have 28 or 30 fathoms; but you may pass close by the Water Islands, and have 24 fathoms within 2 or 3 miles of them; luff up close round these islands for Malacca Road, where in the NE. monsoon the wind is generally northerly.

You may lie in Malacca Road in depth of water from 5 to 12 or 13 fathoms, the church and high land in one, or nearly so, bearing ENE. or NEbE.

From Malacca Road to Cape Richado, the course is NWbW. distance 10 leagues: the depth of water between them 14, 16, 18, 20, 23, 25 fathoms. When Cape Richado bears NE. $2\frac{1}{2}$ miles, you will have 25 fathoms.

From the Water Islands to Cape Richado, the course is NW $\frac{1}{2}$ N. distance 10 leagues: the soundings from 24 to 20, 16, 18, 25 fathoms, from 3 to 6 miles off shore; Cape Richado bearing NW. distance between 3 or 4 leagues. Off shore 4 or 5 miles, lies a hard bank with 13 fathoms on it; but within and without, from 20 to 24 fathoms. On this bank had, when going on it, 20, 18, 17, 13 fathoms; going off it, 14, 17, 21 fathoms. With 13 and 14 fathoms had hard ground. Off it the ground is ouzy.

Mid-way

Mid-way between Malacca and Cape Richado lies a rock above water, about a mile off shore; but ships have no business so near in shore. The variation off Cape Richado, 1763, was $1^{\circ} 20' W$.

From Cape Richado to the land a-breast Parcelar Hill, the course is about NW . northerly, distance 13 leagues; you have soundings between them from 16 to 20, 30, and 35 fathoms, but very irregular: keep in from 18 to 25 fathoms. In clear weather, when a little to the westward of Cape Richado, you will see Parcelar Hill bearing $NWbN$. or $NNW\frac{1}{2}W$. 13 or 14 leagues.

The channel between the coast and south sand is about 4 leagues wide; the soundings, from 16 to 20 fathoms, on the coast side; 30 fathoms, mid-channel; 35 fathoms, and in some places 40 fathoms, toward the south sand. All the way from Cape Richado to Parcelar the coast is low and level. You have pretty regular soundings about 4 or 5 miles off shore, from 18 to 25 fathoms, which is a good depth to keep in; the ground ouzy and good \rightarrow age. The variation off Parcelar, 1762 and 1763, $16' W$.

Being a-breast of Parcelar Hill, or it bearing $E\frac{1}{2}N$. or $E\frac{1}{4}N$. 3 or 4 miles off shore, 17, 18, or 19 fathoms, shape your course for the Pulo Arroes (otherwise called Aru), with respect to the winds and tides, taking care to keep Parcelar Hill $E\frac{1}{2}N$. or E . this will lead you through, between the north and south sands, clear of all danger; but be sure you do not bring it to the southward of east, for $E\frac{1}{4}S$. will bring you on the $2\frac{1}{2}$ fathoms bank.

The tides here set very strong; the flood $SEbE$. and the ebb $NWbW$. It flows, full and change, ESE . and WNW . or $7\frac{1}{2}$ hours; and perpendicularly 9 or 10 feet. You have soundings in the fair way, from 17 or 18 fathoms, 3 or 4 miles from the low land off Parcelar, to 20, 22, 24, 21, 20, 17, 15, 12, 10, and $9\frac{1}{2}$ fathoms; Parcelar Hill then bearing due east, and the low land just in sight from the poop. You are now on the easternmost bank in the channel, and a-breast of the $2\frac{1}{2}$ fathoms bank, which bears north of you about 2 miles; from hence you may see the Round Pulo Aru from the main-top, bearing $W\frac{1}{2}S$.

The above bearings and depth of water, were taken on board the Elizabeth, when the Weymouth, in company, was in 6 fathoms water; Parcelar Hill bearing of her $E2\frac{1}{2}S$. At the same time she bore north of us $1\frac{1}{2}$ or 2 miles; and her boat, which was sounding about $\frac{1}{4}$ of a mile to the northward of her, had 3 and $2\frac{1}{2}$ fathoms, when Parcelar Hill bore of them $E\frac{1}{2}S$.

Steering from thence to the westward, with Parcelar due east, you deepen your water from $9\frac{1}{2}$ or 10 fathoms to 14, 18, 20, and 22 fathoms, and then shoalen it from 22 to 20, 10, 16, 15, 12, $11\frac{1}{2}$, $10\frac{1}{2}$, and 10 fathoms, on the westernmost bank, and between the north and south sand-heads; Parcelar Hill bearing east 8 or 9 leagues, and the Round Pulo Aru seen from the deck $W.8^{\circ}S.$ 7 or 8 leagues. From thence, steering as before, you have, for several casts of the lead, $10\frac{1}{2}$, 11, 12, $12\frac{1}{2}$, 13 fathoms; and will soon deepen your water from 13 to 17, 19, and $24\frac{1}{2}$, or 25 fathoms, clear ground, sand and gravel: still continuing as before, you will have from 25, 24, 23, 22, 20, to 19 fathoms, and then Parcelar Hill bearing east 10 or 11 leagues, and the Round Pulo Aru $W.6^{\circ}S.$ 5 or 6 leagues, you are clear of all the sands, and may steer $WNW.$ or $NWbW.$ so as to pass by the Pulo Arroes within 3 or 4 leagues of them. In this course, till you come within that distance, you will shoalen your water from 19 to 16, 15, and $14\frac{1}{2}$ fathoms, then Parcelar will bear $E.3^{\circ}S.$ about 12 leagues; and the Round Pulo Aru $W.17^{\circ}S.$ 4 or 5 leagues.

The water shoalens gradually toward the Pulo Aru, from 15 to 14, 12, and 13 fathoms, 5 or 6 miles off the Pulo Arroes; ouzy ground, and good \ddagger age, if benighted, or the wind and tide against you.

The Round Pulo Aru is a leading mark through the channel, between the north and south sand-heads, and may be seen from a large ship's poop, in clear weather, 7 or 8 leagues; but none of the others above 4, 5, or 6 leagues.

It flows here, on the full and change, east and west, or 6 o'clock; the flood $SEbS.$ and the ebb $NWbN.$ 6 hours each way, in general; but, as the tides have great dependence on the winds, there have been instances of their irregularity, the ebb running strong for 9 hours together in the $NE.$ monsoon, and the flood as long in the $SW.$ monsoon. The tides running pretty strong here, occasion a great rippling, as if on some shoal or danger; but there is none. After you have passed the Pulo Arroes to the northward, you lose the tides, or they are no longer to be accounted for.

Being off Pulo Aru, the Round Pulo Arroes bearing $SW.$ about 4 leagues and the Long Pulo Arroes $W\frac{1}{2}S.$ you have 19 fathoms water; but steering $NNW.$ or $NWbN.$ you will soon deepen your water from 12 to 22 and 25 fathoms. When the Round Pulo Arroes bears $SSW\frac{1}{2}W.$ 4 or 5 leagues, and the long Round Pulo Arroes $WSW\frac{1}{2}S.$ you will have 33 fathoms; hereabout
you

you meet with the ripling of the tides as above-mentioned. As you go to the northward, you will soon deepen your water to 40, 42, and 44 fathoms; but this will not continue long; for in a small distance you shoalen your water again to 34, 35, or 36 fathoms, which depths will continue all the way to Pulo Jarra.

The course from the Pulo Arroes to Pulo Jarra is NNW. 25 or 26 leagues; in regular soundings from 32 to 37 fathoms, sand and ouzy bottom; but in the NE. monsoon, ships generally steer from the Pulo Arroes NW. or NW $\frac{1}{4}$ N. in order to go between Pulo Jarra and Pulo Varella. A NW. course will carry you 6 or 7 leagues to the westward of Pulo Jarra, in soundings from 37 to 32, 30, 32, 36, and 38 fathoms; when Pulo Jarra bears NE $\frac{1}{4}$ N. 6 or 7 leagues, and Pulo Varella W.

You may pass on either side of Pulo Jarra (which is steep to), having 30 and 35 fathoms close to it. Hereabout you generally have the current setting to the NW. at the rate of 20 miles in the 24 hours; as it does all along the Malaye shore, in the NE. monsoon; but the reverse on the Sumatra side; there you find a southerly current. The variation off Pulo Jarra, in 1763, was 38°W.

Pulo Varella is a small, round, but very high island, lying from Pulo Jarra WbS $\frac{1}{4}$ S. 15 or 16 leagues, with soundings between them from 38 to 40 and 45 fathoms.

The Elizabeth went between Pulo Jarra and Pulo Varella, and was 6 days getting to Pulo Rondo, by keeping to the westward, along the Coast of Sumatra, where she met with mostly northerly winds, and a southerly current; for which reason it is not adviseable for ships to go that way, but keep along the Malaye Coast, to the eastward of Pulo Jarra and Pulo Pera, where you may \leftrightarrow if the wind or current should happen to be against you.

From Pulo Jarra to Pulo Pera, the course is NNW $\frac{1}{4}$ W. distance 42 leagues. You have soundings between them from 25 to 35 and 40 fathoms, fine white sand, sometimes sand and mud. Near Pulo Pera you deepen your water, viz. when Pulo Pera bears NW. or NW $\frac{1}{4}$ N. 6 or 7 leagues, you have from 48 to 50 and 52 fathoms, ouzy ground; and to the northward of Pulo Pera, you have no soundings without 60 or 70 fathoms of line. The variation, by observations, off Pulo Pera, was 7°W. and at other times, 6°E. in 1762; so that it may be said there is no variation in these seas. Off Pulo Pera you meet with the true NE. monsoon.

From

From Pulo Pera steer for the Nicobar Islands; the course is WbN. distance 98 or 100 leagues. The SW. part of the Nicobars lies in latitude $6^{\circ} 45' N.$ and $4^{\circ} 55' W.$ longitude from Pulo Pera. Or you may shape your course for Pulo Rondo, in latitude $6^{\circ} 5' N.$ and longitude $3^{\circ} 43' W.$ from Pulo Pera, the northernmost of the islands off Acheen Head, from whence the Nicobars bear $W 30^{\circ} N.$ 28 or 29 leagues.

CCCII. DIRECTIONS for SAILING from CHINA to INDIA, or EUROPE, through the STRAITS of SUNDA.

The departure of ships from the Coast of China should be between the middle of November and the middle of February; for, although your business would permit you to sail at the beginning of the eastern monsoon, the winds are still so changeable, that you had better wait till they are a little settled.

From Macao you steer a course to go between the little island Potrie (or Middle Island), and those on the west side; and observe to keep rather nearer the latter, on account of the dangers which surround the former: after having passed it, you may steer $S \frac{1}{2} E.$ to get soundings on the English Bank.

Navigators have taken great care to confirm their reckonings by this means, going to China, and have neglected to do it coming back: if you consider the consequence of it, you will find they are in the wrong; for, in the first case, an error can but (at most) occasion a small delay; in the other, they may meet with many dangers, where there is nothing to shew the approaches, and where a little error may cause the loss of a ship. Thus you see the former is the least material, and the precaution absolutely necessary.

Having struck ground on the English Bank, steer to the SWbS. till in the parallel of latitude $12^{\circ} 30' N.$ then SW. to make Pulo Sapata. In steering for Pulo Sapata, be careful to give it a good birth, for fear of being set within it by the currents; and, on the other hand, be cautious of keeping too far to the eastward, because of the shoal which lies about 40 leagues to the eastward of Pulo Sapata.

If in Pulo Sapata's latitude you see it not, you must make sure of Pulo Condore, the better to shape a course from thence to Pulo Timoan. You have soundings all the way between these two islands: therefore, when you are past the latitude of Pulo Sapata, sound; and if you have no ground with 50 fathoms you may conclude you are to the eastward; so that you must haul to the westward, till you get soundings; then steer WSW. and WbS. for Pulo Condore

Condore and you will diminish your soundings gradually, but in case of thick weather, &c. that you cannot see the island, keep your lead going every half hour; and if in the latitude thereof you have 20 fathoms, grey sand and shells you are not above 5 or 6 leagues from the island; but if you have from 25 to 30 fathoms you may be assured you are at least 20 leagues to the eastward.

The bearing of Pulo Condore from Pulo Timoan is N 20° E. distance 122 leagues. It will not be difficult therefore to shape a course from the former to the latter, according to its bearing and distance from you. As for the direction and strength of the currents in this season, the rules are not more certain than during the western monsoon; several ships have been driven toward the Anambas, others toward the Malaye Coast the signs of being near the latter, or rather the former, are mud soundings, and a greater depth, than toward the opposite coast. When you think yourself near the latitude of these islands, if you have 45 or no fathoms, bear to the westward, in order to gain the Coast of Malaye; the decrease of whose depth is a surer sign of your approach thereto, than the quality of the soundings. When you reckon yourself near the length of Pulo Timoan, keep your lead going; and when you have 32 or 33 fathoms, soft clay, you may reckon yourself not far off the island: but come not under 30 fathoms, lest the currents set you among them.

The height of Pulo Timoan makes it easily seen at a great distance, unless obscured by cloudy weather, as sometimes happens at this season. Having made it, you shape your course according to the distance you are from it, to go 5 or 6 leagues to the eastward of Pulo Aor, or nearer if you think proper, but be on your guard, especially in the night, against the tides setting in between these islands.

Ships bound for the Indies must take their course toward the Straits of Malacca; but those bound to Batavia, or directly to Europe, may observe what follows.

In sailing from 5 or 6 leagues to the eastward of Pulo Aor, steer SSE. 20 leagues, then SbE. so as to go clear of the banks said to be in latitude 25° or 30° N. NEbN. of Pulo Lingen; when they are passed, you may steer SbW. as far as the Equinoctial Line, and continue this course so as to pass, according to computation, 12 or 13 leagues to the eastward of Pulo Lingen. You keep this track, not on account of the dangers which surround the east part of this island (there are none at a distance from the island which render the access dangerous) but to prevent the effect of a current, which at this season sets to the south-westward; but it sometimes sets strong to the eastward,

eastward, which you must be very careful of here, and which you may know by the depth of water, having, in the fair way from Pulo Lingen to Pulo Taya, from 18 to 20 fathoms.

If you make a direct course from Pulo Aor, just to go without Pulo Lingen 3 or 4 leagues, you run a risque of falling, in the night or thick weather, upon the Dominis, or the east point of Pulo Lingen. The greatest difference, to the westward, may not exceed 8 or 9 leagues at farthest; so that you may always pass 3 or 4 leagues wide of Pulo Lingen.

About 9 or 10 leagues off Pulo Lingen, you have about 24 or 26 fathoms; but so soon as you are in latitude 20° N. or latitude 15° N. if the currents set to the eastward, stand in toward Pulo Lingen, till you shoal your water to 20 or 18 fathoms.

From this island sail toward Pulo Taya (according as you find the currents); but if you should happen to fall, so far to the eastward of Pulo Lingen, as to prevent your seeing it, you must then steer SW. to get sight of Pulo Taya, and pass between it and the Seven Islands, keeping them 3 or 4 leagues distance. From hence, SbW. will lead you to Batacarang Point, which bounds the west side of the entrance of the Straits of Banca.

In case of the currents setting to the eastward, you may pass within a mile of Pulo Taya without danger. From hence, in the fair way to the entrance of the straits, you have from 15 to 10 fathoms; and when you begin to look out for Monopin Hill, edge over toward the Sumatra shore, to 7 or 8 fathoms; keep in that depth till you get sight of Monopin Hill. As you deepen your water, haul toward the Sumatra shore; and as you lessen it, haul toward Banca, not going within 6 fathoms, nor without 8 fathoms, till you bring Monopin Hill to bear east, and Batacarang west; then you are clear of the Frederick-Hendrick Rock.

The bearings of Monopin Hill (which may be seen a great way off in fine weather) will better direct you how to enter Banca Straits; in particular, you must not approach the Island Banca, but keep along Batacarang Banks, in 8 or 9 fathoms, till you have passed the Rock Frederick-Hendrick; the more the depth increases, the nearer you are to it.

In sailing from the Seven Islands to Batacarang Point, when you are 4 or 5 leagues from the entrance of the straits: if the night or thick weather, prevent your seeing Monopin Hill, it will be necessary to \rightarrow , and wait for clear weather, or the return of day, to enter; otherwise you may fall foul of Frederick-Endrick, or the Banks of Batacarang. As the north and east
parts

parts of Banca are not well known, there are reckoned a greater number of islands than are laid down in the charts. Here follows a remark from the English Pilot.

Capt. John Harle, in the Macclesfield, coming late from China, the sun in his zenith (it being then somewhat difficult to take the latitude at sea), and deceived by the SE. currents, took Pulo Toties for Pulo Tonpon, or Taya, and fell in with the back side of Banca. He found very good soundings in 18 or 20 fathoms, at a reasonable distance off shore, with some small islands on the coast; but so near that none would covet to go between them. He went between the islands that lie off, and the S. (east) end of Banca, in mid-channel, 18 fathoms; but he believes they might have gone much nearer the shore, and recommends it as an extraordinary passage.

Although no accident happened to this ship, the same success is not always to be expected; it is adviseable to beware of falling into the like inconveniency.

Frederick-Endrick being passed, shape your course to range along the banks which project about 3 miles from the mouths of Palimbam River, rather than the Coast of Banca; you must also be mindful of the tides of these rivers, in order to avoid being driven on the banks by the flood, or on the Coast of Banca by the ebb. It is best to keep mid-channel, till a-breast the Fourth Point.

When you are past the Fourth Point, keep along Sumatra as far as the Third Point (here the currents run very strong and uncertain, sometimes 18 or 24 hours one way; therefore it is not adviseable to sail here in the night), and go within 2 miles thereof, then toward the Nanka Islands; from thence shape your course toward the Second Point of the strait: by so doing you escape the mud bank, which fills up the bay between these points. Take notice of the tree, which, in sailing from the northward, easily distinguishes the Second Point from every other place upon the coast.

Beyond this, keep 2 miles off shore, as far as the First Point; and when past it, you stand to the southward, so as to pass 2 leagues to the westward of Lucepara: at this distance you avoid the shoals which surround it. Between the First and Second Points lies a shoal off the Banca shore, almost mid-channel over; so that you must take care you do not come half-channel over toward Banca.) The principal reef, and that which most requires your notice, is situate between the First Point and this island; sometimes the sea

O o o

breaks

breaks upon it. The best method to guard against it is, after passing the First Point, not to sail above a league and an half from the Sumatra shore, which lies SbW.

When Lucepara bears east, at the distance above-mentioned, steer SE. to pass it, and get into deeper water. You are sometimes obliged to edge to the eastward, on account of the tides, which, in coming out of the Straits of Banca, take their course toward Great-Tree Island. Its being very shoal along this coast, renders its access dangerous; it will therefore be necessary to keep the lead going.

Or, when you approach the First Point of Sumatra, haul in toward it; and when a-breast of it, about 3 miles off, you will see the Island Lucepara SSE $\frac{1}{2}$ E. 5 leagues; then steer S $\frac{1}{2}$ E. till it bears SE $\frac{1}{4}$ E. keeping about 3 miles from the Sumatra shore; then steer S. till it comes out ESE $\frac{1}{4}$ S. the First Point NbW $\frac{1}{4}$ W. and the southernmost part of Sumatra in sight SSW $\frac{1}{2}$ W. then edge over to the SSE. toward Lucepara, till it bears E $\frac{1}{4}$ S. or E. then steer SEbS. till it comes out EbN. and ENE. then steer SE. till you have brought it NE. 5 or 6 miles; then steer SEbE. till it bears N. and NbW. and then you are clear of the banks. By well observing these courses and bearings, you will have no less than 5 or 4 $\frac{1}{2}$ fathoms.

From Lucepara shape a course toward the Two Sisters (commonly called the Two Brothers). Capt. Haggis makes them to bear nearest NbE. and SbW. of each other, and just 2° difference of latitude between them. It is necessary here to have recourse to sounding; and after losing sight of Lucepara, to keep as much as possible in depth from 9 to 12 and 13 fathoms. If you find it less than 9 fathoms, as may happen (especially about the bank off Great-Tree Island), edge a little to the eastward; but if you meet with more than 12 or 13 fathoms near the Two Sisters, you must haul in to the westward; by this means, and often sounding, you may always be sure of making the Two Sisters. However, you must not expect between Lucepara and the Two Sisters to find very regular soundings; the inequalities are sometimes considerable; but you cannot be deceived if you keep constantly sounding.

On approaching the Two Sisters, if you have not a perfect knowledge of them before night, it will be better to \rightarrow , or put about, than hazard the passing them in the dark, and thereby risque either the running on the Shabanders, or the other bank, lying EbN. of these islands; there being no other way to avoid these dangers, than by keeping a proper distance from the Two Sisters. This danger had like to have happened to the Worcester, Capt. Hall, in 1765, they
having

having mistaken some high land on Sumatra for the Two Sisters, which at sun-set bore SSW. but having a squall in the night, they \rightarrow ed in 11 fathoms; and at sun-rise saw Sumatra from SWbS. to SiW. Had they not \rightarrow ed, they would have run into danger; therefore it is proper to have a perfect sight of them, if you intend sailing in the night. At first sight, coming from the northward, they appear in one, though two round islands; and may be seen 6 or 7 leagues. You may sail as near as you please to the westward of them, having 10 or 11 fathoms within $\frac{1}{4}$ of a mile of them.

To judge from what has happened to several ships that have made this passage, it seems as if from Great Tree Island the currents, at this season, set frequently to the south-eastward; so that some have found themselves within sight of the island Nordwak, or the North Watcher, instead of the Two Sisters. The depth will prevent your being mistaken, having 15 or 16 fathoms about the former, and only 12 fathoms near the Two Sisters.

Therefore, after you have passed the shoal of Great-Tree Island, haul in a little to the westward; and by keeping $9\frac{1}{2}$ or 10 fathoms, you will be sure to make the Two Brothers; but if you exceed 11 fathoms, you will scarcely be able to weather the Two Brothers, but fall in with the North Watcher. If in the day-time, and clear weather, you may keep sight of Sumatra shore; but come no nearer than 9 fathoms, because there is a shoal lying not far off it, which is steep to from 7 fathoms. On sight of the Two Brothers, endeavour to pass them between 2 or 3 miles.

If, for want of observing this, or by contrary winds, you are obliged to pass between Nordwak and the Two Sisters, you range the former at a league distance, instead of keeping mid-channel; by which means you avoid the bank above-mentioned.

Having passed Nordwak, if you are bound through the Straits of Sunda, you must take care of a rock under water, which the ship *Jason* struck on, in 1742, on her return from China. This rock lies 2 leagues WNW. of the little island Destan, or the Western Island, about 5 leagues SbW. from that of Nordwak.

Ships from the Straits of Banca, bound to Batavia, generally make this island; from whence they sail along the Thousand Islands to the eastward, as far as the little island Sudwak, or the South Watcher, 9 leagues NNW. off the entrance of Batavia Road.

SSE. about 2 leagues from the south end of the Two Brothers, lies a shoal even with the water's edge, on which the Dolphin was a-shore.

Those who go through the Straits of Sunda, from the Two Sisters, shape their course so as to pass a league to the eastward of North Island, near the Coast of Sumatra, and 7 leagues NW. from Bantam Point. From the Two Sisters steer for North Island, between SWbS. and SW. North Island is pretty even land, of an oval form, and appears at first rather low, though it may be seen 7 or 8 leagues. The Coast of Sumatra, to the south-westward of it, is shoal, having only 4 fathoms, mud, 2 miles off shore; but you may go quite close to the island to the westward of it, and have very deep water. If you intend watering at North Island, \rightarrow with the island NNE. the middle of the Three Sisters, SWbS. $2\frac{1}{2}$ miles; the Button, SSE $\frac{1}{2}$ E. The watering-place, which is a sandy beach, will then bear about SSW.

The winds, at this season, blowing from the westward, and the currents sometimes setting out of the straits, it is necessary hereabout to keep on the Coast of Sumatra, rather than that of Java, in order to enter the straits with less difficulty.

You have 20 fathoms a league off North Island; so that if it happens to be calm, you may \rightarrow near it; for it will not be prudent to lie driving about at the strait's mouth. From North Island, or hereabout, you steer to go to the eastward of the Great Cap, or Button; then between the little one and the south point of Middle Island, or Thwart the Way. Take care to avoid Brower's Sand, by not bringing this Cap and Anger, or Anjeer Point, in one. There is also a small shoal, with only 3 fathoms, when the Button bears NNW. the Cap, SW $\frac{1}{4}$ S. 2 leagues; and Gertry's Island, NNE. Likewise, when the Button bears SEbS. 2 miles, there is a rock under water.

As soon as you have passed the reef, which projects from the south point of the latter, to go toward Prince's Island, keep to windward, without coming near the Coast of Java, whence it will be difficult to claw off with the winds of this monsoon, which generally are from NW. This reason should also prevent your going to \rightarrow at Cantaye, or Mew Island. As the ships which want water may be supplied at Prince's Island, the most convenient place is at the foot of a high mountain, on the SE. side of the island; but the \rightarrow age there is not good, having no less than 30 fathoms very near the shore.

On the SE. part of Prince's Island is an high peaked hill, the highest land upon the island. This hill bearing from SW. to NNW. you have good \rightarrow ing ground from 36 to 44 fathoms, about a mile off shore; and this hill bearing from N $\frac{1}{4}$ W. to WbN. little more than a cable's length off shore, from 10 to 30 fathoms,

30 fathoms, coarse sand, with shells and coral. Or bring the high hummock SWbW. and the easternmost point NE. and you may \rightarrow in 38 fathoms, fine sandy ground, about three quarters of a mile off shore.

The boats go for water about the southernmost point in sight, till they bring the said hummock NWbN. then they will open a small sandy bay, at the easternmost part of which is a run of fresh water, and a path cut through the wood to the place where you fill (about 100 yards up) very convenient for rolling your cask; but if you fill below, depend upon it your water will be brackish, though you fill it at low water. But this place has been objected against, as the boats have to row round the point against the current, so that they can make but one trip a day; therefore ships, for the conveniency of watering, may \rightarrow right off the watering place, where you are as well defended from the NW. winds as at the former; and the SW. winds blow equally in on both, unless you run in there under 35 fathoms; and then you are in a manner land-locked, which cannot be done off the watering-place. But the conveniency is so great, and the hazard so little, that you may \rightarrow with the high land bearing NWbN. in 35 fathoms, soft ground, half a mile off shore.

Between Middle Island, and several others to the eastward of Hog Point, is a very fine channel to enter the Straits of Sunda, coming from the northward. This channel seems advantageous, especially in this season; because it affords much better shelter from the winds than that between the Fourth Point and Middle Island. Those who would pass through it, must steer from North Island, so as to range very near the islands lying along the Coast of Sumatra, that they may \rightarrow there, in case of a calm; and when they have passed the southernmost of them, steer so as to pass on the same side of Cracata Island, and then toward Prince's Island. Captain Hall passed close to all these islands, and found them steep to. But observe herein, when you have passed Middle Island, or Thwart the Way, not to come too near Hog Point; because off it there are several rocks under water. Captain Hall saw them break for at least $\frac{1}{2}$ a mile. Also, at SSW. 2 leagues from Pulo Crocatao (or Cracata) there is a dangerous rock under water.

To the north-eastward of Middle Island, there is a rock near the water's edge, on which the sea breaks. It lies, according to a curious Dutch draught, about 2 leagues from this island, and WbN $\frac{1}{2}$ N. one league from the Button. There is also another at the NW. end, called the Stroom Rock, which looks like a boat turned upside down; but at high water there is only a rippling to be seen over it. Captain Hall says that you may go very close to the westward of it.

of it. This rock, and the want of \rightarrow ing-ground in mid-channel, renders it difficult; so that, upon the appearance of an approaching calm, you should not attempt it; but if it should happen, that after having passed Middle Island, the current should drive you back thither, you must resolve to \rightarrow , and wait for a breeze. Though the charts mark no foundings to the westward of this island, yet there are 45 fathoms $1\frac{1}{2}$ league off.

Several navigators have thought to go out of the Straits of Sunda by the channel between Prince's Island and the Coast of Sumatra; it may succeed better than passing to the northward of Middle Island; but the winds from N. to NE. which favour this passage are generally of short continuance; and the way being long, you may be liable, during the succeeding calm, to be tossed from side to side by the currents, without being able to help yourself: besides, in this part, especially to the northward of Prince's Island, there is no depth for \rightarrow ing but very near shore, and the monsoon wind blowing afterward, you may be (after many difficulties) obliged to go through the channel between this island and the Coast of Java, by which ships are accustomed to go out, on account of the winds and currents which facilitate this passage. The Dutch call this Behouden, or the Safe Passage.

Notwithstanding these advantages, whether you sail from the \rightarrow age at Prince's Island, or come directly out of the straits, you must keep as near this island as possible; and avoid approaching that of Cantaye (or Mew Island), from whence, at this season, it will be with great difficulty that you get off again. In this manner having reached the west, or rather the south point, you sail near the rocks called the Carpenters, which project out from its extremity. Here is no danger at the distance of a stone's cast. Here you often meet with a violent opposition between wind and tide, when the sea agitated, rises and breaks furiously on the west point of Java. This proves it necessary to keep on the opposite side, to prevent being exposed to evident danger. As soon as you are out of the straits, haul your wind, standing to the southward, to get into the variable winds way, by favour of which you may reach the Cape of Good Hope, or the Isles of France and Bourbon.

CCCIII. DIRECTIONS for SAILING from BOMBAY, or SURAT, for CHINA, through the STRAITS of MALACCA.

The usual time for ships that are bound to China, to sail from Bombay, or Surat, is in April, or early in May. You may coast it along the Malabar Coast at

at a reasonable distance, in sight thereof, or in soundings. The best way is to keep a good offing in May, as the winds then hang pretty much to the westward, and are often to the southward of the west. You may take your departure from Cape Comorin from whence ships make about 16° E. longitude to Pulo Rondo, or $14^{\circ}\frac{1}{2}$ to the SW. part of the Nicobars: but you may steer from Cape Comorin for Point de Gall, and take your departure from thence for Pulo Rondo, which bears due east from Point de Gall. Ships usually make about $13^{\circ}\frac{1}{2}$ E. longitude between them. Ships that take their departure from the Great Bassas, make about $10^{\circ}\frac{1}{2}$ to the SW. part of the Nicobars, or $11^{\circ}\frac{1}{2}$ to Pulo Rondo.

In crossing the Bay of Bengal, you are to observe, that there is a constant northerly current during the SW. monsoon, and a southerly or SW current the NE. monsoon; which you must make allowance for in the course steered. Having made Pulo Rondo, proceed for sailing through the Straits of Malacca to Pulo Sapata, and from Pulo Sapata to Canton.

CCCIV. REMARKS made in SAILING from BOMBAY to the CAPE of GOOD HOPE, through the INNER PASSAGE; or between MADAGASCAR and the COAST of AFRICA. By Mr. Nicholson.

We set sail from Bombay, December 16, 1763, and steered along the Coast of Malabar, in soundings from 10 to 40 fathoms; having moderate land and sea breezes, fair weather, and smooth water. The winds hung much more to the southward than I ever knew them, blowing mostly from ESE. to S. SW. and WSW. (very uncommon winds on this coast in December.)

On the 30th we joined Admiral Cornish in his Majesty's ship the Norfolk, in company with his Majesty's ships America and Chatham, off Calicut, from whence we took our departure (allowing its latitude $11^{\circ} 12' N.$ and longitude $75^{\circ} 30' E.$ from London), and sailed through the Nine-degree Channel, with moderate winds in the NE. quarter. The best latitude to keep in, steering through the Laccadive Islands, is $9^{\circ} 40' N.$

On the 1st of January, 1764, at noon, being in latitude, by observation, $9^{\circ} 49' N.$ and longitude, made from Calicut, $3^{\circ} 6' W.$ saw the island Seuhellipar from the mast-head, bearing NbE. distance 6 or 7 leagues: this is low flat island. The variation was observed, A. M. $1^{\circ} 5' W.$ from thence steered to make the land to the northward of Cape Bassas, and met with nothing very remarkable, having steady moderate gales in the NE. quarter, a smooth sea, and

and pleasant weather; found little or no current, sometimes a few miles to the northward, and at others as much to the southward, in the 24 hours, until we made the land.

On the 15th, at $\frac{1}{2}$ past 5 P. M. being then in latitude, by account, $6^{\circ} 47' N.$ and longitude, made from Callicut, $24^{\circ} 2' W.$ the variation $10^{\circ} 29' W.$ saw the land of Africa from NNW. to $W\frac{1}{2}S.$ distance 5 or 6 leagues: at the same time sounded, and had 50 fathoms, fine white sand. We steered a $SSW\frac{1}{2}W.$ course all night, which carried us rather off the land: a $SWbS.$ course by compass, seems to be the along-shore course.

The land hereabout is pretty high, with white cliffs, or sand hills, near the sea, which may be seen in clear weather, 8 or 9 leagues, and seems to be pretty bold, and clear of danger. The variation, A. M. by several observations, was $10^{\circ} 38' W.$ At noon the latitude, by observation, $4^{\circ} 49' N.$ and longitude, made from Callicut, $25^{\circ} 20' W.$ We this day found a current, which set the ship 19 miles to the southward of the reckoning.

The 16th, at 6 P. M. Cape Bassas bore $WbS\frac{1}{2}S.$ the northernmost land in sight, N. distance, off shore, about 7 leagues; being then in latitude, by account, $4^{\circ} 15' N.$ and longitude, made from Callicut, $25^{\circ} 35' W.$ or $49^{\circ} 53' E.$ from London: the variation $10^{\circ} 43' W.$ The course and distance from the land we first made, in latitude $6^{\circ} 47' N.$ to Cape Bassas is S. $25' W.$ or $SSW\frac{1}{2}W.$ about 57 leagues. This day found the current had set the ship 27 miles again to the southward of the reckoning.

Took my departure from Cape Bassas in latitude $4^{\circ} 10' N.$ and longitude, by computation, $49^{\circ} 5' E.$ from London; and found the current along this coast generally setting to the southward, sometimes at the rate of 35 or 36 miles in the 24 hours. On the 18th, crossed the equinoctial, in longitude, made from Cape Bassas, $2^{\circ} 41' W.$ the variation $13^{\circ} 16' W.$

On the 27th at noon, saw the Coast of Mosambique very plain, from $NWbW.$ to $W.$ I imagine it to be very high land, as we were at least 14 or 15 leagues from it, and saw only the tops of the hills, which appeared like islands. The latitude in, by observation, $13^{\circ} 42' S.$ and longitude, made from Cape Bassas, $6^{\circ} 50' W.$ Mosambique bearing, by estimation, $S38^{\circ} W.$ distance 34 leagues, had mostly moderate gales from the NE. quarter, sometimes ESE. and sometimes NNW. with fair weather, the current setting mostly to the southward. The variation increased to $17^{\circ} 4' W.$

Finding our reckoning from Cape Bassas to Mosambique pretty exact, took a fresh departure from Mosambique, supposing it to bear as by estimation at
noon

noon, allowing its latitude $15^{\circ} 4'S.$ and longitude by computation, $41^{\circ} 56'E.$ from London. The 28th, found the current had set the ship 40 miles to the southward of account in the last 24 hours; the winds from WbN. to NW. and NNE. with some squalls, thunder, lightning, and rain. The 29th, fresh gales from N. and NNE. to ENE. hazy weather, with some rain, and a large swell from the NNE. Found ourselves 59 miles to the southward of the reckoning (supposing this current sets SW). The sun near our zenith. The 30th, strong gales and squalls from N. to NEbN. with a large sea from the NNE. thick hazy weather, and some rain. This day found ourselves 8 miles to the northward of account: latitude, by observation $19^{\circ} 55'S.$ longitude, made from Mosambique, $41^{\circ} W.$

The 31st, toward evening, had a great sea from the SE. which thwarted that from the NNE. and made a very high confused sea. At mid-night came on a violent hard gale of wind, with much rain. The wind from noon to midnight veered round gradually from NbE. to NEbE. E. ESE. and SE. then the gale was at the height: from midnight to noon the gale rather increased, and the wind veered from SE. to SSE. We were lying under a reefed and balanced mizen, and mizen stay-sail, much distressed on account of the ship's being so leaky, that she gained upon all the pumps, and bailing at all the hatchways with buckets, &c. At noon it blew very hard, with rain and a great sea from SE. latitude in, by account, $20^{\circ} 46'S.$ and longitude, made from Mosambique, $2^{\circ} 11'W.$ We here lost the NE. trade. From this time to the 3d of February, had strong gales from S. to SbE. SbW. SWbS. SW. and WSW. with cloudy weather, frequently hard squalls, with rain, and a very great sea from the SE.

This day we lost our rudder, which, together, with the leaky condition of our ship, made us really in a distressed condition: latitude in, by observation, $19^{\circ} 52'S.$ and longitude, made from Mosambique, $1^{\circ} 7'W.$ Found we were set 60 miles to the southward of the reckoning, since the last observation. From the 3d to the 8th, had the wind from WSW. WbS. SWbW. to SbW. SbE. and S. mostly fresh gales, cloudy weather, with frequent squalls and rain, and a large swell from the southward. Found the current, for these last 5 days, had set the ship to the southward of the reckoning, at the rate of 31 miles a day.

This day got a machine over-board, and steered the ship with it, instead of a rudder: latitude in, by observation, $21^{\circ} 45'S.$ and longitude made $35'E.$ from Mosambique: the variation $24^{\circ} 32'W.$ The next day found the ship had been set 46 miles to the southward of account, and 15 miles more on the 10th.

On this day the America informed us, that they had seen Cape St. Sebastian, that at 8 A. M. it bore due west, 24 leagues; from which bearing I corrected my reckoning, and took a fresh departure, finding the ship $4^{\circ} 22'$ to the westward of the reckoning; from whence I judge the strong current, we have found setting to the southward, must have set to the westward also: so that we were for several days within 20 and 25 leagues of the continent, and consequently passed the Bafias de India a great way to the westward of them: latitude in, by observation, $22^{\circ} 56'S.$ and longitude $1^{\circ} 25'E.$ from Cape St. Sebastian; the variation $25^{\circ} 4'W.$

From the 10th to the 28th, had a great variety of winds and weather, but mostly from the eastern board, moderate and fair. The current has set chiefly to the southward, of various degrees of strength, from 49 to 7 miles in the 24 hours: sometimes we have not been sensible of any current for 2 or 3 days together; at others a small matter to the northward, and that but seldom. At noon saw the land bearing $N\frac{1}{2}W.$ at a great distance: latitude in, by observation, $35^{\circ} 2'S.$ and longitude made, $7^{\circ} 57'W.$ from Cape St. Sebastian: the variation $22^{\circ} 54'W.$

On the 29th, at 2 P. M. the extremes of the land bore from ENE. to $N\frac{1}{2}W.$ and a remarkable high peak NbeNE. distance 14 or 15 leagues. This land in general seems very high and mountainous, and some part of it is exceeding high: according to our latitude, it is not laid down in the charts so far to the southward, by a great deal, as it ought to be. At noon, were in latitude, by observation, $35^{\circ} 7'S.$ and longitude made, $9^{\circ} 26'W.$ from Cape St. Sebastian: the variation $21^{\circ} 40'W.$ had soundings 70 fathoms, fine black sand. We coasted it in soundings from 68 to 50, 40, and 38 fathoms, distance off shore from 15 or 16 to 7 or 8 leagues. There are many openings to the sea along this coast, which seem to form deep bays; some of them so deep we could not see the land at the further end.

March 4th, made Cape Lagullas, which is a low point of land with a gradual slope to the seaward, and forms itself in 2 points; one running out to the southward a long way into the sea (this is the proper Cape Lagullas); the other point is also low, and lies some distance to the north-eastward of the true cape: the land between them forming a round bay, seemingly about 3 leagues wide. The coast, from the inner point, turns in with a quick rounding to the northward, and forms a very deep bay; the land to the north-eastward being seen only at a great distance.

When

When Cape Lagullas and the point before mentioned are in one, bearing NNE½N. and the pitch of the cape NbE. 4 or 5 leagues, you will then have soundings in 50 fathoms, fine grey sand. Then you may see a very high bluff point of land close to the sea, bearing NW½N. 9 or 10 leagues; the westernmost land in sight, and appearing like a gunner's quoin: this lies from Cape Lagullas NWbW. 8 or 9 leagues, and Cape Falso WbN½N. distance 24 leagues.

Although Cape Lagullas is a low point of land, at some small distance from the sea, it is about the height of the North Foreland; and the land rises gradually to a considerable height in-land. At some distance in land are seen very high mountains; but no land near the sea so high as the Gunner's Quoin, either to the eastward or the westward: therefore ships, seeing the land about this coast at 10, 12, or 14 leagues distance, must of course set the Gunner's Quoin land for Cape Lagullas, it being the only land near the sea that can be seen at that distance. When the Gunner's Quoin bears NbW. it does not appear like a quoin, as it does when you are off Cape Lagullas, but in a very different form.

When Cape Lagullas bears E½N. 7 or 8 leagues, and the land of the Gunner's Quoin Mountain, N½E. 4 or 5 leagues, you will have 50 fathoms, fine sand. When the Gunner's Quoin Mountain (which forms an high bluff point, when you are either to the eastward or westward of it) bears EbN. and the extreme of the land to the westward (which then seems to be a pretty high steep point of land) bears NNW. distance off shore 4 leagues, you will have 50 fathoms, coarse brown sand. The land then bearing NNW. trenches in quickly to the northward, and forms a bay between it and the land of Cape Falso, so very deep that you cannot see the further part thereof from the ship's deck.

Standing to the westward, in latitude $34^{\circ} 41'S$. 8 or 9 leagues off shore, opposite this bay, you deepen your water from 50 to 60, 70, and 80 fathoms, sand and ouze; when you are about 6 or 7 leagues to the eastward of Cape Falso: the variation, 1764, $19^{\circ} 39'W$. To the westward of this bay, and 5 or 6 leagues to the eastward of Cape Falso, the land is very high and mountainous near the sea, with several openings like the entrances of bays, or harbours.

On the 6th at noon, Hottentots Point bore NbW½W. distance about 5 leagues; at the same time had soundings in 68 fathoms, muddy ground: latitude in, by observation, $34^{\circ} 41'S$. and longitude made $13^{\circ} 31'W$. from Cape St.

Sebastian: the variation $19^{\circ} 39' W$. By the reckoning this day, at noon, the ship was 4 leagues to the eastward of Cape Falso, or 10 leagues from the Cape of Good Hope, which, according to several observations repeatedly made in the years 1751, 1752, and 1753, is in longitude $18^{\circ} 30' E$. from London; so that the true longitude of the ship was $19^{\circ} 7' E$. from London. Allowing Cape St. Sebastian in longitude $36^{\circ} 32' E$. from London, and deducting $19^{\circ} 7'$ therefrom, the longitude made from thence should be $17^{\circ} 25' W$. whereas, by the reckoning, it was only $13^{\circ} 31' W$. which shews that the current had set strong to the westward all along this coast, as it generally does.

Hottentots Point, or Cape Falso, is the outermost point on the east side of Falso Bay, and lies about 6 leagues due east from the Cape of Good Hope, and may be seen 8 or 9 leagues; between them is the entrance into Falso Bay. At the outer part of Falso Cape there is an hill, which, when you are to the eastward of it, appears much like the Sugar-Loaf Hill in Table Bay; this hill is separate from the other high land; and at a small distance within this hill there is another of the same form, but not so high: the land near the sea, and about those hills, being very low, makes them appear conspicuous when you are to the eastward of them; hereby Cape Falso may be known.

At a small distance within the inner hill there are very high mountains, one of which is level on the top; at a distance it has some small resemblance of the Table Land at Table Bay, which gives it the name of the Falso Cap. This has been mistaken for the Table Land; and the other two hills, one for the Sugar Loaf, and the other for the Lion's Rump: but there is one thing that may at all times convince people of their mistake, the soundings. The outer hill at Cape Falso bearing $NbW\frac{1}{2}W$. about 5 leagues, latitude in $34^{\circ} 40' S$. had soundings 68 fathoms, white muddy ground; at the same time the extremes of the land to the eastward bore $EbS\frac{1}{2}S$. whereas with the Sugar-Loaf Hill in Table Bay bearing so, and in that latitude and distance from the land, you have no soundings.

I worked the bearings and distance from the land we first saw, on the 29th of February to Cape Falso, $W2^{\circ}S$. 100 leagues; whereas the charts make it WbS . and allowing for the set of the current during the 7 days we coasted it along shore, 30 leagues more may be added, which will make the distance of the land we fell in with 130 leagues eastward of Cape Falso: allowing 21 leagues for the current (which is in the same proportion), it will make 91 leagues.

The

The land is every where exceeding high and mountainous, both in land and near the sea, and full of large and wide openings, as above-mentioned. The soundings are very regular every where to the eastward: where we first made the land, you have 65 fathoms, at 14 or 15 leagues off shore; and 46 or 47 fathoms, 8 or 9 leagues off shore; about Cape Lagullas you have 57 or 58 fathoms, 7 or 8 leagues off shore; and about 5, 6, or 7 leagues to the eastward of Cape Falso, you have 60 and 64 fathoms, muddy ground, 5 or 6 leagues off shore.

In the offing, Cape Lagullas bearing, by estimation, from NEbN. to N. about 18 or 20 leagues, in latitude $36^{\circ} 3'S$. you have soundings on this bank from 75 to 80 fathoms, fine grey sand; and 12 or 15 leagues to the eastward of that, the variation $20^{\circ} 39'W$. 1764, 90 fathoms, brown muddy sand. In this latitude the bank runs but little further to the eastward; for in 8 or 10 leagues you have no soundings.

In the opening of Bay Falso you have 54 and 56 fathoms, muddy ground; Hottentots Point, or Cape Falso, bearing NNE. and the easternmost part of the Cape of Good Hope NW $\frac{1}{2}$ W. 3 or 4 leagues; in latitude $34^{\circ} 25'S$. and variation $19^{\circ} 30'W$. for 1764. About 3 or 4 leagues further off shore, you have 64 and 70 fathoms. The bank does not run far off the shore hereabout. The variation is increased near a degree at those places to the present year 1780.

As you run to the westward toward the Cape of Good Hope, you will shoalen your water from 68 to 60, 55, or 54 fathoms, muddy ground; in which latter depth Cape Falso bears east, distance about 3 $\frac{1}{2}$ leagues; and the very pitch of the Cape of Good Hope (which is the south-easternmost point of land on the west side of Bay Falso) NW. about 3 leagues. On the pitch of the cape, or very near it, is a very high, ragged, rocky, peaked hill, something in shape like the Sugar-Loaf Hill, but not so high, with no other high land near it. Within the entrance of False Bay, you have soundings from 40 to 36 fathoms, sandy ground, sometimes mud. The pitch of the Cape of Good Hope bears, from the pitch of the False Cape, by compass, WbN $\frac{1}{2}$ N. so that, allowing the variation, they bear due east and west of each other, in latitude $34^{\circ} 25'S$. and distance 6 leagues.

The Rocks, and other dangers near the Cape of Good Hope, have been already mentioned in Section CCLIX. Page 274; which see.

CCC.V. DIRECTIONS for SAILING from the CAPE of GOOD HOPE to the ISLANDS
ST. HELENA, ASCENSION, and from thence toward the BRITISH CHANNEL
By the same.

As soon as you are clear of the land near the Cape of Good Hope, steer NW. this will soon bring you into the SE. trade-wind; and, in the fair weather season, you generally have fresh steady gales from south-eastwardly all the way.

It has been too much the practice, in observing the variation of the compass at sea, not to be so exact as could be wished; but observing the variation with exactness is of much greater utility than correcting the course by the common method of sailing; and, if nicely observed, answers all the ends of longitude in navigation, particularly where the increase and decrease is quick.

It is my opinion, that, sooner or later, there will be some very important discoveries made by the variation of the compass; so I hope there will be more attention paid to the variation, for the time to come, than hitherto has been.

In steering to the north-westward, you will rather decrease the variation; for, in latitude $32^{\circ} 40'S$. and longitude, made from the Table Land, $1^{\circ} 24'W$. we had $19^{\circ} 35'W$. in latitude $31^{\circ} 30'S$. and longitude made 3° ditto, had $19^{\circ} 25'W$. in latitude $29^{\circ} 50'S$. and longitude, westing 5° , had $18^{\circ} 42'W$. variation, which decreases gradually as you run toward St. Helena.

In the parallel of that island, and $3^{\circ} 10'$ eastward thereof, we had $13^{\circ} 42'W$. variation; about 2° to the eastward, had 13° or $12^{\circ} 55'W$. and $1^{\circ} 20'$ to the eastward, had $11^{\circ} 50'W$. and in St. Helena Road had $11^{\circ} 38'W$.

St. Helena is an high, steep, rocky island, about 18 or 20 miles in circumference, accessible only at the landing place, on the NW. side thereof, which is well defended with batteries of guns. A ship bound to this island must run down along the north side of it, and within $\frac{1}{2}$ a cable's length of Sugar-Loaf Point, and afterward keep the shore close a-board, within a cable's length: there is no danger, the shore being bold and steep to. On the west part of Sugar-Loaf Point stands a small fort; a little to the southward thereof is Rupert's Valley, where there is a good line of guns: the next point to the southward of the valley is an high steep point, called Munden's Point, on the top of which there is a battery of guns; this point must be kept close a-board:

the

the next valley is called James's or Chapel Valley, off which is the place of \rightarrow ing.

You may \rightarrow in from 8 to 15 fathoms. The flag-staff at the fort bearing from SSE. to SEbS. Sugar-Loaf Point, NEbE. and Horse-Pasture Point, SWbW $\frac{1}{2}$ W. distance off shore about $\frac{1}{2}$ a mile; with these bearings you have a good and convenient birth for watering. This bank runs out to the westward, from the fort, about $1\frac{1}{2}$ mile, and deepens gradually from 7 fathoms, near the shore, to 30 or 35 fathoms, about $1\frac{1}{2}$ mile off shore; from whence it deepens suddenly to 60 fathoms; and then no soundings. The bottom in the road is coarse sand and gravel. You have no soundings till you come a-breast Rupert's Valley, and then you have 18 or 20 fathoms.

Notwithstanding the barren appearance of this island from the sea, there are many fruitful valleys in the inland parts, which produce fruits and vegetables suitable to the climate, and afford good pasture for a great number of the finest cattle in the world, with which they abound. The beef and mutton are excellent in their kind; and they have abundance of poultry; also plenty of good potatoes, yams, and other vegetables. The air is always cool and pleasant, and the island healthy, though it lies in so low a latitude, a fresh SE. trade-wind blowing continually over it.

As ships meet with good refreshments here, their sick speedily recover from the scurvey. Here is plenty of good water; but wood is rather a scarce article. One watering-place is just without James's Fort, where there is a crane to strike the casks into the boat; the other is at Lemon Valley, where is the best water; and you fill the casks in your boat with an hose, only it is a little further to fetch it.

I observed the latitude in the road, $15^{\circ} 59'S$. and made longitude, from the Cape of Good Hope, $22^{\circ} 42'W$. which makes but $4^{\circ} 12'W$. from London: whereas Mr. Maskelyne, by celestial observation, makes it $5^{\circ} 49'W$. from Greenwich, or $5^{\circ} 44'W$. from London: therefore must impute the difference to our having partaken of part of the current, well known to set to the westward, round the Cape of Good Hope; especially as few ships are known to make more longitude between these two places. The variation, by several observations, whilst lying in the road, was $11^{\circ} 38'W$. The tides here are little or none.

Between the Island St. Helena and the Island Ascension the SE. trade-wind blows, all the year long, fine, steady, pleasant gales, and mostly fair weather. The variation decreases very gradually between them. In the latitude of
Ascension,

Ascension, and $1^{\circ} \frac{1}{2}$ to the eastward thereof, we had $10^{\circ} \frac{1}{2}$ W. variation; and about 1° to the eastward of it, had $9^{\circ} 52' W.$ and at Ascension had $9^{\circ} 48' W.$

The Island of Ascension is an high, barren, rocky island, about 20 miles in circumference, and may be seen 10 leagues in clear weather. It is so entirely barren, that there is not the least appearance of any kind of vegetation; nor is there any fresh water on it: these are sufficient reasons for its being uninhabited. There are many goats on this island, of which our people shot several; they were very meagre, as might reasonably be expected; and it abounds in sea-turtle, the largest and finest perhaps in the world.

A ship bound to this island must sail down along the north side of it, and may keep it close a-board, it being bold and steep to; and when you come to haul up for the road, you must still keep the shore close a-board; you may sail within two cables length, or less, of it (there being no danger) till you bring Cross Hill on the middle of the Sandy Bay.

This bay is about a large quarter of a mile deep, and about $\frac{3}{4}$ of a mile wide. The westernmost point of this bay is dangerous, a reef of rocks running out from it about a mile from the shore, on which, in bad weather, the sea breaks; therefore care must be taken not to go too near it.

The \rightarrow ing-place is on the NW. side of the island, off the above-mentioned sandy bay; opposite to which, in-land, there is a high hill by itself, with a flag-staff and cross upon it, which gives it the name of Cross Hill. A good mark for \rightarrow ing is, to bring Cross Hill on the middle of the Sandy Bay: when it bears SSE $\frac{1}{2}$ E. and the extremes of the island from NE $\frac{1}{2}$ E. to SW $\frac{1}{4}$ S. then you will be in 10 fathoms water, and about $\frac{1}{2}$ a mile off shore. The bottom is sand and gravel, clear ground. This is as good a birth as any in the road. The latitude, observed in Ascension Road, is $7^{\circ} 57' S.$ and longitude, made from St. Helena, $7^{\circ} 41' W.$

Sailed from Ascension, allowing it to lie in latitude $7^{\circ} 57' S.$ and longitude $13^{\circ} 54' W.$ from London; we crossed the Line with $7^{\circ} 56' W.$ variation, and longitude made $6^{\circ} 11' W.$ from Ascension; and had the SE. trade-wind, fresh and steady gales, to latitude $3^{\circ} N.$ From latitude $3^{\circ} N.$ to $5^{\circ} N.$ had mostly light winds and variable, from SE. to NE. with some few calms. In latitude $5^{\circ} 21' N.$ and longitude, made from Ascension, $9^{\circ} 10' W.$ variation $6^{\circ} 50' W.$ we met with the NE. trade-wind, which continued fresh and steady gales to latitude $28^{\circ} \frac{1}{2} N.$

Notwithstanding the few calms we met with, and the quick change of the trade-winds from SE. to NE. all this may have been merely accidental.

Several

Several ships have crossed the Line with nearly the same variation that we did, and consequently as far to the eastward, and about the same time of the year, and met with the same kind of winds that we did; yet this is not sufficient to prove it a general rule, to cross the Line so far to the eastward, especially if the sun is on or near the Line; because from 5° of either latitude, you are liable to meet with calms, more eastward toward the Coast of Guinea. Experience sufficiently proves, that the farther to the eastward on the Line, and under 5° of either latitude, the more subject you are to calms; therefore the same rule which holds good in crossing the Line outward-bound to India, will also hold good homeward-bound, which is to cross it with about 7° or $6^{\circ} 30' W.$ variation, which is nearly about the meridian of St. Jago; or homeward-bound, not to cross the Line with more than $8^{\circ} W.$ variation, where you will be the less subject to calms. The present variation at the Equinoctial is nearly half a degree more than either of the respective numbers, when this voyage was performed.

I have passed to the westward of the Cape de Verde Islands, in latitude $16^{\circ} 5' N.$ which is about the latitude of Bonavista, with $4^{\circ} 4' W.$ variation; longitude, made from Ascension, $19^{\circ} 56' W.$ or about 12° to the westward of Bonavista. I have also passed the latitude of St. Antonio, the northernmost and westernmost of the Cape de Verde Islands, with $3^{\circ} 37' W.$ variation; longitude, made from Ascension, $20^{\circ} 48' W.$ This was the lowest variation I had in this passage; reckoning we were then about 10° to the westward of St. Antonio. From thence, as we ran to the northward, found it increase.

In latitude $28^{\circ} \frac{1}{2} N.$ found the NE. trade-winds began to decrease: they first moderated, then turned to little winds and variable; and in latitude $29^{\circ} N.$ to $30^{\circ} N.$ the winds veered from the ENE. to SE. S. and SW. in which quarter they mostly continued. In latitude $29^{\circ} N.$ longitude, made from Ascension, $23^{\circ} 10' W.$ had $6^{\circ} 30' W.$ variation. In latitude $38^{\circ} 40' N.$ which is pretty near the latitude of Fayal, one of the western islands; longitude, made from Ascension, $22^{\circ} 8' W.$ had variation $12^{\circ} 44' W.$ supposing we were then about 8° to the westward of Fayal, and $5^{\circ} \frac{1}{2}$ to the westward of Carvo.

The variation was observed, 1764, by his Majesty's ships Weymouth and Panther, amongst the western islands, and in Fayal Road, $13^{\circ} 34' W.$ so that a ship, in the latitude of Fayal, observing the variation to be under $13^{\circ} 30' W.$

might have been sure she was to the westward of the western islands. About 3° to the westward of Carvo (the northernmost and westernmost of all the western islands, in latitude 40° N. longitude 31° W. from London) the variation was $13^{\circ} \frac{1}{4}$ W. and in latitude $40^{\circ} 50'$ N. longitude, made from Ascension, $19^{\circ} 44'$ W. and about 3° to the westward of Carvo, there was $13^{\circ} 37'$ W. variation.

Though the increase of the variation near the western islands was so slow, or gradual, that you would run 3° of longitude to the increase of $55'$ or 1° variation; when you were to the northward of the western islands, and steering to eastward, you would increase the variation very gradually: for example, from the last mentioned variation, latitude and longitude, you would run 18° or 19° to the eastward, before you would increase the variation to $18^{\circ} \frac{1}{4}$ W. which you would have in latitude $49^{\circ} 10'$ N. to $49^{\circ} 30'$ N. and longitude in about 15° W. from London, or $8^{\circ} \frac{1}{4}$ W. from Scilly; which shews that the variation increased very gradually, or at the rate of $4^{\circ} \frac{1}{4}$ of longitude to $1^{\circ} \frac{1}{4}$ of variation.

But it has a quicker increase as you come nearer the English Channel; for in latitude $49^{\circ} 20'$ N. to latitude $49^{\circ} 30'$ N. (which is the proper parallel to steer to the eastward in for the English Channel), and longitude $10^{\circ} \frac{1}{4}$ W. from London, you will have variation $19^{\circ} \frac{1}{4}$ to $19^{\circ} \frac{1}{2}$ W. and soundings hereabout in 95 or 100 fathoms, fine grey sand; 46 or 50 leagues to the westward of Scilly. In latitude $49^{\circ} 25'$ N. and longitude $9^{\circ} 38'$ W. from London; variation $19^{\circ} 51'$ W. and soundings 82 fathoms, gravel and pebble stones; 38 or 40 leagues to the westward of Scilly. In latitude 49° to $49^{\circ} \frac{1}{4}$ N. and longitude $8^{\circ} \frac{1}{2}$ W. from London; variation $20^{\circ} 7'$ W. soundings at 75 fathoms, coarse white sand, like oatmeal, with some pieces of shells; 20 leagues to the westward of Scilly.

In latitude $49^{\circ} 10'$ to $49^{\circ} 25'$ N. longitude in $7^{\circ} 6'$ W. from London, Scilly bearing NNE. distance 12 or 13 leagues, variation $20^{\circ} 30'$ W. and soundings 68 fathoms, fine white sand, with some small pieces of shells. In latitude $49^{\circ} \frac{1}{4}$ N. soundings at 65 fathoms, white sand, with broken shells, Scilly bearing north of you, distance about 9 leagues. In latitude $49^{\circ} 23'$ N. variation 21° W. soundings 60 fathoms, coarse brown sand, were WSW $\frac{1}{4}$ S. distance 34 leagues from Start Point, the Lizard bearing N 47° E. distance 17 leagues, and were 8 leagues to the eastward of Scilly. In latitude $49^{\circ} 37'$ N. variation, $21^{\circ} 2'$ W. soundings 52 fathoms, gravel stones, and small shells; the
Lizard

DIRECTIONS for SAILING from the CAPE GOOD HOPE toward ENGLAND. 451

Lizard bearing NWbN. 8 or 9 leagues, and the Start E $\frac{1}{2}$ 6°N. distance 17 leagues. In latitude 49° 53'N. variation 20° 6'W. soundings 45 fathoms, broken shells, with some stones; the Start Point bearing ENE $\frac{1}{2}$ N. distance 9 or 10 leagues; the distance seen from the deck. The Start Point ENE. the entrance of Plymouth Sound NbE. the Eddystone NbW $\frac{1}{2}$ W. distance 3 or 4 leagues; distance off shore about 6 leagues; soundings 44 fathoms, fine white sand; the variation 20° 6'W. The high land of St. Alban's NE $\frac{1}{2}$ E. distance 7 or 8 leagues, in 34 fathoms, coarse white sand, with gravel stones: variation 19° 20'W.

These observations were made in July, 1764.

By the above observations of the variation, you see the gradual increase of the variation, coming into the English channel. You may also observe, that the highest variation in the English channel was off the Lizard; and that it decreases as you run farther up. In regard to the soundings, the variety is so great that little can be depended thereon; for you seldom have two casts of the lead alike; the depth of water only, is to be depended on, with this general rule; that to the southward of the parallel toward Ushant, and on the Coast of France, the water is deeper and the soundings coarser, than on the English coast, being mostly gravel, with pebble stones; if any sand, it will be very coarse: whereas on the English coast, toward Scilly, 20 leagues to the westward of it, 9 or 10 leagues to the southward thereof, and 15 leagues to the eastward of it, the soundings are white, grey, or brown sand, sometimes mixed with broken shells and Hake's teeth. In the parallel of latitude, from 49° 20' to 49° 30'N. your soundings will, in general, be fine white or grey sand, sometimes brown sand.

CCCVI. DIRECTIONS to be observed, coming into the ENGLISH CHANNEL.
By the same.

The proper parallel of latitude to keep in, to steer to the eastward, for the entrance of the channel, is from 49° 20' to 49° 30'N. and when you have increased the variation in that parallel to 19° or 19° $\frac{1}{4}$ W. you will have soundings at 95 or 100 fathoms water, 46 or 50 leagues to the westward of Scilly. Steer to the eastward in the aforesaid parallel of latitude, till you shoalen the water to 65 fathoms, when you may be sure Scilly bears north of you, distance about 9 leagues. Still direct your course to the eastward, so as to

Qq q 2

keep

keep in the same parallel latitude, or $49^{\circ} 30' N.$ till you shoalen the water to 55 fathoms; you may then with great safety steer in NEbE. in order to make the Lizard, which you will get sight of, by steering so 3 or 4 leagues; you will then see the Lizard bearing NNE. or thereabout of you, distance 7 or 8 leagues.

I would recommend it as a general rule for all ships coming into the channel, to make the land about the Lizard, it being the properest place for a land-fall; and then, if thick, hazy, or bad weather come on, you know where you are, and what course to steer. I have known ships neglect making the Lizard running up the channel a great way without seeing the land; they have then met with hazy and bad weather, which has exposed them to much danger: they then could not make the land, on account of the thick, hazy, weather, and have been much puzzled to know how far they had got up the channel; nor have they been certain which side of the channel they were upon. In this state of fear and confusion, I have known a ship steer a course (to avoid the dangers on the Coast of England) which ran it ashore on the Coast of France, where they were lost; whereas, if they had made the Lizard, they would have had a short departure, and could have determined, with great certainty, where they were when so taken in hazy or bad weather.

In all the practice of navigation short departures are certainly the best; but absolutely necessary in narrow seas like the English Channel: and as lights are placed on the Lizard, a ship may with great safety make it in the night as well as the day: the light standing so high, that it may be seen at a great distance, the Lizard Point being a bold land, and steep to.

The Lizard bearing from NbW. to NbE. distance 3 leagues, you will have 45 fathoms water, coarse gravel, stones, and shells, and pieces of slate: the Lizard bearing north, distance 2 leagues, you will have 45 fathoms, pebble stones, and scollop shells; which shews there is no danger in running for this land, night or day.

I would recommend it to all those who are desirous of being well acquainted with the channel, to keep their lead constantly going, when the wind and weather will permit them so to do; and frequently to set the bearings of the land, at least every two hours: by this they will be better acquainted with the soundings of all the head-lands, and off the coast between them at different distances from the land. This will give them a more perfect knowledge

ledge of the channel : and they then will not be so at a loss to know where they are in hazy weather, or the night-time ; taking care to note them down in their log-book. By this they will not only gain experience themselves, but will also be instructive to others.

I have been informed by persons of undoubted veracity, that they have known those (who having been entrusted with the command of ships of great consequence) have steered the course up channel by the draught of the channel, without allowing the variation ; and that they have insisted upon it, the variation was allowed in the draught : by this they have run into great danger, and narrowly escaped being lost :

In respect to the allowances to be made for the variation,, coming into the channel, and in the channel, please to observe what follows. From 20 leagues to the westward of Scilly, at Scilly, and as far to the eastward of the Lizard, you cannot allow less than 2 points, W. variation ; and from the Lizard, all the way up channel, to the South Foreland, $1\frac{1}{4}$ of a point W. variation.

From the Lizard direct your course up the channel, allowing the variation in the course. Between the Lizard and the Start you will have soundings, in the fair way, from 45 to 42 fathoms ; keep without 40 fathoms, and you need fear no danger from the Eddystone. There are 39 fathoms water in passing by the Eddystone, within 3 miles of it ; when it bears NbW. N. and NbE. the same distance, and depth of water. From the Start to the Isle of Wight, you will have soundings, in the fair way, from 35 fathoms, a little to the eastward of the Start, to 32 fathoms ; Portland bearing N. 4 leagues. From Portland to Peverel Point, and to the Needles, you will have from 28 to 30 fathoms in the fair way, or 4 or 5 leagues off shore. Keep without 28 fathoms, and you need not fear the in-draught of the channel of the Needles.

You may pass by the Isle of Wight in from 25 to 30 fathoms ; distance off it from 3 to 5 leagues. Between the Isle of Wight and Beachy Head, you will have soundings, in the fair way, from 30 to 22 fathoms. Keep without 20 fathoms, and you need fear no danger from the Owers ; but come no nearer than 18 fathoms, night or day. Off Beachy Head, and between that and Fair Lee, you have 21 and 22 fathoms, between 3 or 4 leagues off shore ; and from 30 to 35 fathoms, 6 or 7 leagues off shore.

The channel is certainly a dangerous navigation in the winter-time : here you have hard storms, short days, and very long dark nights ; the weather frequently foggy, or very hazy, for several days together, so that you cannot see the land.

It

It is then the ingenious navigator's art, skill, and experience, are put to the trial; it is then he wants to know, by his soundings, whereabouts he is; how far he has got up or down the channel; which side he is upon; how far off the shore he is by the soundings, how the tides set, and the time of their flowing, that he may take all advantages of them, by standing on that tack whereby he can take the tide under the lee-bow, his only assistance to help him off the lee-shore. And when the weather clears up, that he can see the land, with perhaps an harbour just under his lee, and night coming on, it is then he stands in need of a particular description of that harbour, with proper directions for sailing into it.

APPENDIX

A P P E N D I X.

A SHORT ACCOUNT of a PASSAGE from CHINA, Late in the Season, Down the CHINA SEAS, through the SOUTHERN NATUNA ISLANDS, along the Coast of BORNEO, through the STRAITS of BILLITTON or (CLEMENTS STRAITS) to the STRAITS of SUNDA. By Mr. G. ROBERTSON.

BEING in the fleet composed of the following ships, the Glatton, Pigot, Lord Holland, Earl of Mansfield and Vanfittart, under the command of Captain John Clements, on the 25th of April 1781, left China, and took departure from the Grand Ladrone, allowing its latitude $21^{\circ} 57' N$. On the third day's run, at noon, in latitude $15^{\circ} 42'$, struck soundings on the Macclesfield Bank 35 fathoms, having then made $1^{\circ} 05'$ East longitude by account from the Grand Ladrone, and by Captain Frazer's Time-keeper $1^{\circ} 08' E$. which must be very near the truth in so short a time. I have examined many journals, and find them all much the same; the Princess Royal at the end of the second day's run (Captain Frazer's journal) makes exactly $1^{\circ} 05' E$. to soundings in latitude $15^{\circ} 56' N$. The bearings from the Grand Ladrone are S. $10^{\circ} E$. 370 miles to where we had ground. With a steady pleasant breeze, mostly from the ENE. to NE. steered down from the Bank a SW. by S. course to the latitude of $12^{\circ} N$. longitude $1^{\circ} 46' W$. of Ladrone, then kept down a S. by W. course until we got soundings, 120 fathoms grey sand, our latitude then $6^{\circ} 42' N$. and longitude $3^{\circ} 30' W$. of Ladrone. In latitude 8° our mon oon failed, had then light winds, variable, and calms, which made it very tedious in getting to the southward; our soundings gradually decreasing to 58 fathoms, when we got sight of the northernmost of the Grand Natuna Islands, bearing from S. to SSW. about 10 leagues; our latitude then $4^{\circ} 47' N$. The Great Natuna is very high land, rising to the appearance of a circular mountain in the middle, and is the easternmost land; I think it may be seen nearly 15 or 16 leagues: the other islands appeared rather long and flat. By many observations taken of ☉ and ☽ and ☿ and ♀, particularly by Captain Frazer in the Mansfield, find the longitude of the eastern

eastern part of Grand Natuna Island to be $5^{\circ} 36' W.$ of Grand Ladrone; latitude of the middle of it nearly $4^{\circ} 6' N.$ From 27 miles East of Grand Natuna steered South by compass, and got sight of *High Island*, one of the Southern Natunas, bearing SSW. 9 leagues, our latitude $2^{\circ} 59' N.$ By Time-keeper made 78 miles easting from Grand Natuna when we saw High Island, which is 51 miles more easterly than account gives in two days, and which places High Island on the chart in its true position from the Grand Natuna, 71 miles east of it, and the northernmost point of Platt, which is the northernmost of the Southern Natuna Islands in latitude $3^{\circ} 2' N.$ and 56 miles East of it, a difference of 44 miles of easting from their situation on Mr. Dalrymple's Chart; consequently that error throws the coast of BORNEO upon his Chart all that quantity too far westward, and which the fleet proved was the case in their passage along its coast. Found, whenever we had occasion to \rightarrow , after leaving the Grand Natuna until we got amongst the Southern Natuna Islands, strong easterly currents, a knot and half per hour when strongest, which accounts clearly for the error of the reckoning in two days, and shews the utility and accuracy of the *Time-keeper*, which, I must observe, when going well, is of the greatest use imaginable in such cases of short distances and strong currents; on the 25th of May we got up to the North point of Platt, the northernmost of the Southern Natuna Islands, and \rightarrow ed in 18 fathoms, small gravel and sand, from which station I began the Chart of the Islands along the West Coast of Borneo, in doing which I was greatly assisted by the various cross bearings of the different ships of the fleet. Views of all the Islands are engraved on the same plate, which will be found of great use.

The passage through between the high and low group of Southern Natuna Islands is safe, clear, and wide; towards the northernmost and Flat group, it is foul and rocky for three or four miles off shore: the shoal the Pigot had near run upon is dangerous, but it is quite out of the way in going the direct passage: *High Island*, and *Sapata*, which is the southernmost, and has an appearance of the island of that name in the China Seas, forms the South side of the passage, they are steep to. The fleet's track down the Coast of Borneo, after getting clear of these islands, was very tedious, owing to the strong current, which continually sets to the NW. and the wind, which hung dead at SE. caused their being the whole month of June in getting down to the Islands of Carimatra and Souroutou, although the distance is not quite two good days run. I was induced to make this Chart, from the very fine opportunity there was in setting one island

island from in sight of the other all the way down the coast, having a noon latitude nearly a-breast of each of the islands, so that all their situations are pretty exact; their names are inserted on the Chart.

The fleet's intended route, after getting to Carimatta, was to have gone the *passage* of that name, and then through Bally Straits; but found, when we got to these islands, it was totally impossible to get the least forward to the South-eastward. After laying a week at \pm , without any prospect of a change, the commanders agreed to push for the Straits between Billiton and Banca, which we gained on the 4th of July, and \pm ed in 14 fathoms mud, off the pitch of North West Island. In leaving the Islands Carimatta and Souroutou nine leagues to the eastward, a SSW. course will bring in with North West Island, which is the outermost of a cluster of islands off the NW. point of Billiton; in clear weather, both lands may be seen from the mast-head at the same time, at least there will be but few hours sail from sight of one to the other; the high land of Billiton is to be seen from deck eight or nine leagues, and appears like two hummocks; a first sight view on the plate of views shews its appearance. The North coast of Billiton is very rugged, with many small rocks above and under water at a considerable distance from the shore; if I may judge from the western side, it is but a dangerous coast to approach too near all round.—From North West Island run in for Billiton, or Treacherous Bay, where, from its fine appearance, judged the fleet would find refreshments, and water to fill up their stock, and by that means be enabled to run through the Straits of Sunda, without stopping; but, unfortunately, in running in with a fine breeze and remarkably smooth water, the Earl of Mansfield struck, and stuck fast upon a small rock, with good soundings all round, such as eight, nine, and ten fathoms sand, close to it; most of the fleet being within her at the time, immediately \pm ed: the ship got off in about an hour, without damage. Next day sent a boat from each ship to sound the bay, afterwards to go on shore in quest of fresh water. Upon their return they reported the bay all over foul and full of rocks, and that they could find no water. Some of the boats went a great way up Salt-water River, where they saw a few wretched fishermen and three or four miserable huts. Finding nothing could be done here, at daylight, 6th of July, the Commodore made the signal for departure; the ships all steered out of the bay much the same way they came in; however, the Pigot happened to stick fast upon another small rock, and with some difficulty got off, being ebb-tide when she got on; at the same time saw a reef to the northward of her shewing their heads above water, which we must have passed very

close to in coming in, without perceiving any mark of rippling, owing to the very smoothness of the water. The Vanstittart at \leftrightarrow in the center of the reef where the ships struck was in latitude $2^{\circ} 41'S$. bearings as follows: North West Island N. $20^{\circ} E$.; Billiton from N. $40^{\circ} E$. to S. $2^{\circ} W$.; extremes of Long Island, from S. $17^{\circ} W$. to S. $50^{\circ} W$.; Gasper Island N. $67^{\circ} W$.; distance from North West Island six or seven miles, and about four or five miles off the nearest Billiton shore. After what has been said I have little need to caution, by no means to come far into Treacherous Bay.

If coming from the northward and eastward, I mean from the Island *Carimatta* or Coast of *Borneo*, or going to the northward, by *that route*, of all the different passages between Middle and Long Island, *that* the fleet came through is by far the best and widest, and what I would advise ships to take, in preference to any other, between Billiton and Banca; the passage is between North and South Islands on one hand, and Saddle Island, which forms an appearance of a saddle both when to the northward and southward of it, on the other. I have given very particular Views upon a separate sheet of the whole range of islands when to the northward and southward of them, which will be found very useful. The best track to keep is mid-channel, or nearly so, between the aforesaid islands, in order to avoid a funken rock, which is about the size of two long-boats, on which there is only one half fathom, and no appearance of danger, five fathoms along-side of it, and eight, nine, and ten fathoms sand all round. Saddle Island bears from it SbW $\frac{1}{2}$ W. distance three or four miles: North Island EbN. three or four miles; Barn Island WbS. and the South point of Middle Island WNW. It lies nearly North from the reef that extends a mile and half to the East of Saddle Island; to the westward of that reef there seemed deep water between the island and it. Know of no other danger in this track from Treacherous Bay, *it* having been well explored by the boats of the fleet. From Saddle Island steer down for the two small islands called Breaker Islands in the the Chart (by some called Shoal Water Island) keeping to the westward of them; *they* are distant from Saddle Island about six or seven leagues, and bear nearly South from it. Met with nothing particular in our run to the southward, except the two shoals, which are to the southward of Breaker Island, on the southernmost of which is a small spot of dry white sand, distant nearly ten miles from the island; make no doubt but *they* are the southernmost shoals that surround Billiton on that side. Found all along good regular soundings, eight fathoms was the least water when to the SW. of the southernmost shoal, which bank runs across to the NW. with eight and seven fathoms upon

upon it, sand and ouze, until it joins Foul Point Bank, to the southward of Banca; which may be observed upon the Chart by the soundings of the different ships tracks; it then gradually deepens to 13 fathoms, to within sight of the *North Watcher*, whose latitude I make $5^{\circ} 12\frac{1}{2}'$ South, bearing from *Breaker Island* S. 24° W. 124 miles: found the current to set to the NW. and SW. four fathoms *per* hour; but there is no certainty, or rule to go by, as to its strength or exact drift in these particular parts. The *Clements Straits*, *Middle* and *Gasper Islands*, and all to the eastward of them, are laid down principally from my own observations on the spot, except the small alteration of the position of the shoal between Middle Island and the Small Sandy Beach Island, which is now placed in the Chart as it really lies, from the observations of Captains Cooper, Easterbrooke, and Huddart, who passed on different sides of it. Captain Cooper, in going out, 1785, followed a Portuguese to the West of it; and Captain Easterbrooke, in coming home, came the same way; Captain Huddart, homeward, 1785, passed to the East. It is a very narrow passage, and consequently a more dangerous one, although good soundings and deep water, owing to the said shoal, on which the sea does not at all times break, and which was the case when these ships passed it; but it broke very high when the fleet passed, and, from where I took the bearings, seemed to block up the whole passage. I think, although these ships have gone that way, it is by no means to be preferred. The two small shoals to the NE. and SE. of Middle Island were not seen to break, but *they* certainly encrease the number of dangers in that track. Captain Easterbrooke observes, the south easternmost or small shoal is in one with Gasper Island, bearing $N\frac{1}{2}W$; and he advises keeping the large or middle shoal on board, in preference of being too near the small ones, which cannot at all times be so well *discovered* as the large one, which when it don't break shews a strong rippling and has but a few feet water on it. "Captain Huddart observes, in his remark of that passage, "there are two dangerous shoals to the eastward of Middle Island, and scarce "two miles asunder, which renders it more difficult: I passed *between* them in "1788, but to the eastward of both in 1785, which passage I should always prefer "as the safest, on account of the strong currents that set athwart to the south- "eastward during the NE. monsoon, sometimes above three knots *per* hour."

Having finished my remarks with respect to Clement's *Straits*, will now give a short account of the materials from which I was enabled to lay down the *Gasper Passage*; it is formed by the island of *Banca* to the West, and *Middle Island* to the East. The *Macclesfield*, in the year 1702; Sullivan,

December 1784; Ponsborne and Hawke, January, 1785; likewise the London, in 1787; all passed through them, and from *their observations and journals* I made the draught. *They* seem by far the most eligible for ships coming from the islands of Pulo Auro, and to deserve the preference to that of Banca at any season of the year, as there is deep water, a clear passage, and a shorter distance; whereas, in the Straits of Banca, although the dangers are pretty well determined, yet ships very often get a-ground in coming through, particularly in the Lucepara part of the passage; which is both shoal and narrow. Since my publication of the Gasper Straits there has been a survey taken of them and the North Coast of Banka, by Capt. Leftock Wilson of the Vansittart, who obligingly gave me a copy of his observations, from which I have corrected that part of the Chart in the present edition, at the same time have added from original journals all the other dangers hitherto known.

REMARKS for GASPER PASSAGE.

If coming from the northward or Auro Islands with an intent of passing through the Gasper Straits, get sight of Pulo Toty, whose latitude is 58°S. pass it to the East, and steer down for Gasper Island, taking care not to come nearer to the Banka shore than 16 fathoms. Gasper bears from Pulo Toty SE. distance about 40 leagues, the fair way, soundings between them is 17 and 18 fathoms, which is a very good guide to go by at night or in thick hazy weather, however I would advise by no means to come nearer Gasper in the dark than 7 leagues, which will keep you perfectly clear of the shoals to the northward of it, on which the Belvidere and Warren Hastings struck.

The Belvidere's shoal was first seen by the Sullivan, Hawke and Ponsborne, 1784, 1785, Gasper Island bears from it SSE. 4 or 5 leagues, and the NE. point of Banka SbW½W. distance about 7 leagues.

The Warren Hastings Shoal was first seen by the Hawke, 1785, the bearings of the land from where the Hastings struck, is, viz. The High Land on Banka S° 58' W. extremes of ditto from S22°W. to S°62'W. the center of Gasper Island S70°E. Tree Island S17°E. distance from it about 8 or 9 mile. They found it to extend North and South about 2 miles, and were on shore about the middle of it.

The Belvidere's Shoal and this were both seen to Break, when the Hawke and Ponsborne passed, but suppose they were not in that state when the above ships grounded; these shoals are in general coral rock and steep too. Having got

got sight of Gasper Island steer down for it, keeping it to the eastward of SSE. to avoid the Belvidere's shoal, go between it and Tree Island, taking care to avoid also the Warren Hastings Shoal, or pass Tree Island to the West, as occasion offers, there is 20 fathoms to the West of it, and I should think it is the best track, as both the Warren Hastings and Belvidere's Shoals are in that case left on the East, whereas in going between the Islands you have also to go between the Sands, which are now placed on the Chart in their true position, and will shew the course that ought to be taken.

Tree Island has a remarkable tuft of trees on it, and appears at a distance like a ship under sail. After passing Gasper and Middle Island, it makes its appearance, which steer down for, keeping to the West of it; it is steep too, with a shoal running out a little from off the N. and S. points: there is no danger in this passage, keeping any way within the tracks upon the Chart, or not getting within the points of Banca to the westward, as it shoalens very fast, with great overfalls in going into the bay formed by Banca, according to the Macclesfield's account, 1702, who sent her boats in to sound, also by the ship Carnatic's journal, 1787, which was the last ship that passed through when these Charts were first published with the following bearings: that ship had eight fathoms: the NE. point of Banca NNW $\frac{1}{2}$ W. distance three or four miles; high land West; the SE. point, and which is the easternmost extremity of Banca, S $\frac{1}{2}$ E.; Middle Island from SE. to SSE $\frac{1}{2}$ E. four or five leagues; and Gaspar Island NE $\frac{1}{2}$ N.—The depth through in Mid-Channel is 17 and 18 fathoms, deepening to 24 fathoms, when the S. point of Middle Island bears ESE. and then gradually shoalens again to 12, 11, and 10 fathoms when to the southward of the South Point of Banca. It will be proper to observe, in passing these straits, that Middle or Salt Island ought to be kept nearest on board, especially in the easterly monsoon, to avoid falling to the westward, when to the southward of the SE. or what is called by some Rocky Point of Banca, as the bank which stretches for many leagues to the southward of it, is all over foul with dangerous and sudden overfalls; I have inserted the London's track home from Capt. Easterbrook's journal and observations, in order to shew the Eastern edge of the bank to the Southward of the SE point of Banca. That ship lay a night at \rightarrow upon the extream eastern edge of it, in 7 fathoms hard ground, although they had shoal water and sudden overfalls, could see no broken water, to the northwestward.

REMARKS

REMARKS *after Passing the SE. POINT of BANKA, SAILING to the SOUTHWARD.*

Having got to the southward of Middle Island, pass the SE. point of Banka at a moderate distance, and keep a southerly course, so as not to get to the westward of the SE. point of Banka, until you loose sight of the low land of the Coast which joins the hummocks, that is to say, when the South Coast of Banka appears like separate little islands, you are then far enough to the southward, and may haul as much westerly as necessary. In the next place great care must be taken to avoid the Vansittart's shoal, which lies to the eastward of this track and to the southward of Middle Island. To keep clear of this shoal, steer a course so as to keep Middle Island always a little to the *eastward of north*, which will carry you wide of it to the westward. In coming by the Clement's Straits from the passage between Saddle and South Islands, steer down for Shoal Water Island, it is then passed to the east. The bearings of this dangerous shoal is as follows: The peak of *Saddle Island* in one with the center of the *Shoal* $N 28^{\circ} E$. at same time *Shoal Water Island*, $S 43^{\circ} E$. By another bearing, the southwest extremity of it bears in one with the peak of *Saddle Island* $N 33^{\circ} 15' E$. *Shoal Water Island* $S 45^{\circ} 50' E$. By these cross bearings it lies south a little westerly from Sandy Island, and in latitude, according to Capt. Cumming, $3^{\circ} 12' S$. Having passed these dangers, a SSW. course made good, will bring you up to the Brothers, the northernmost of which lies in latitude $5^{\circ} 09' S$. and bears from Middle Island $S 23^{\circ} W$. about 50 leagues. Know of no other dangers in these tracks, so that the same caution is necessary to be observed in going to the northward as here described in sailing from the northward.

In the *General Chart* I have connected the whole of these islands, *with the continuation* of all the tracks to the North Watcher, carefully laying down the soundings; Pulo Docan is placed from Toty as it really bears; Lingin, Pulo Taya, and the Seven Islands, are principally placed from M. D'Après; the soundings are entirely from the journals and observations communicated to me by the several commanders who have gone that way, and very different from what are laid down in former Charts; the outline of the Straits of Banca is mostly taken from the last edition of D'Après; the soundings are entirely from journals of the East India Captains, particularly from two of Captain Frazer's, in the Princess Royal and Earl Mansfield; the North Watcher, Western Island, and the westernmost of the Thousand Islands, are from *my own*,
corroberated

corroberated with *Captain Fraser's observations*; the shoals about these islands are exactly placed as they bear from the respective islands, from a printed account which I received from Mr. Dalrymple; their situations I have made a memorandum of upon the Chart, likewise a short remark for entering the Straits of Banca from the northward, in case the directions for these straits should not be at hand. The India Directory, to my own knowledge, gives the best instruction possible for the Lucepara part of the passage, so that there needs no repetition or alteration; the bank to the northward of Lucepara is laid down with the Bridge-water's bearings, when aground, supposing it to be the outer edge of the bank; to the eastward of Lucepara I have no account, all the soundings from thence to North Island are entirely from the best observations and journals of ships that came that way, whose names may be referred to upon the Chart. The Shabander Bank is from D'Après; I never could find any body who had been to the westward of it, so have pricked a line from it to the Sumatra shore. I have a manuscript Chart which shews good soundings to the westward, but I do not know the authority. There is a reef runs out from North to South of the Brothers, about a quarter of a mile each way; between them (the Brothers) there is a passage of nine and 10 fathoms, from Captain Scott of the Neptune's authority, who had his boat in sounding; either side of the Brothers may be passed, but it seems the West side is in general preferred, on account of the Dolphin Rock which lays to the SSE. of it. North Island is placed in $5^{\circ} 41'S$. its true latitude, very different from the old Charts, which make it a great deal more to the northward; St. Nicholas Point is placed *accordingly* from North Island. From St. Nicholas Point to Batavia I have laid down the coast from a very accurate Dutch manuscript Chart upon a very large scale, which I procured when at Batavia in the Vanfittart. I have not shewn all the different shoals *particularly*, but have pricked from the outer edge of the one to the other, in the same manner as I have done the extent of the shoals off the mouths of Paleimbang River in the Straits of Banca. As that part of the Chart is but of little consequence, otherwise than shewing the relative situation of the whole, I have not confused it with more soundings than just the edge of the banks and the Vanfittart's track, but have been very particular and exact in all the islands and beacons: the South Watcher is placed from that Chart.

The Five Fathom Bank between Lucepara and the Brothers, By Mr. Dalrymple's account, lies SSE. 30 miles from Lucepara; Captain Fraser in
going

going out 1778 passed the tail of it in seven fathoms fine sand, and had immediately again deep water, 14 fathoms and mud. His run to making Lucepara agrees exactly with Mr. Dalrymple.

Course from Gasper Island to mid-channel of Pulo Auro is NbW½W; regular soundings from 20 to 28 fathoms; the longitude of Monopin Hill from satisfactory observations made by Capt. Frazer, when in the Princess Royal chief officer, is as follows

| | |
|----------------------------------|--|
| 5 fights of Aldebaran, West of 》 | } makes it 105° 06' mean, East of Greenwich, my adopted longitude. |
| 5 ditto of Arietes, West of 》 | |
| 5 ditto of Pollux, East of 》 | |

The meridian lines upon the Chart are drawn from the longitude of Batavia, allowing it 106° 51' E. from Greenwich, I have only now to add, that the general position of the whole upon the Chart, with respect to the longitude, is as near the truth as required.

As the General Chart includes Batavia, I think it just necessary to mention a few remarks, which I made on my last voyage in the Vanfittart to that place. The course from off Bantam Point is nearly E½S. to the Great Cambuys Island, which is immediately known by a prodigious large tree above all the others, nearly on the middle of the island. Between *it* and the Man-eaters Island, is the *passage* of 3½ or 4 miles wide. From the beacon of the Cambuys reef to the *buoy* of Man-eaters shoal, which, according to the Dutch, is placed in four fathoms on the outer edge of the bank, it is a very hard sand, and dangerous to get aground upon. Keep 1½ mile to the northward of Man-eaters Island, and you are then in the fair way; and when *it* bears WSW. are then clear of all danger, and may haul up for the Little Cambuys Island, which has likewise a shoal to the WSW. of it with a beacon; the island itself, and the shoal that runs from it to the eastward are both steep to, having in the Vanfittart passed them at a quarter of a mile distance with 10 and 11 fathoms water. From this island the *Great* or *Edam* Passage is generally preferred by unacquainted people; but the Dutch seem to like the narrow or inner passage, formed by Ontong Java Point on one hand, and Middleburgh and Amsterdam Islands on the other; the marks when I was there seemed well pointed out, having a buoy or beacon upon every thing that could possibly bring up a ship, throughout every track into the roads; the Dutch say this narrow passage is the best way; but cannot speak from experience, having never gone it. From the Little Cambuys keep to the eastward for the Island Edam; when within a mile of it, steer down to the southward, the passage being then open; leave
Horn

Horn Island to the starboard hand, which will bring in to Batavia Roads where you may \rightarrow in what water you please. I must observe, no ships moor, as the \rightarrow is immediately buried in the mud.

STRAIT of ALLASS; By Mr. ROBERTSON in the VANSITTART, 1780.

This *strait* extends 16 leagues NNE. and SSW; the *Island Sumbawa*, on the *East*, is very high and rugged: the inland hills covered with wood. Its SW. *point* which makes the South entrance of the *strait* extends about 4 or 4½ leagues farther to the South, than the SE. *point* of *Lombok*, which is moderately high, with *white cliffs* along its *South coast* for a great way to the westward; the *point* itself very much resembling the *South Foreland*.

In coming into this *strait* from the southward it is best to keep nearest the *Lombok shore*, where you will sooner get into *soundings*, and much better \rightarrow ground, than on the *Sumbawa shore*, which we found *rocky*, and *steep* too, all through the *strait*.

When the SE. *point* of *Lombok* bears WNW. and the SW. *point* of *Sumbawa* SEbS. you will then have ground between 64 and 70 fathoms, *coarse sand* and *coral*, distance off the *Lombok shore* 2; or 3 miles: where in case of its falling calm, or the *tide* setting against you, you may come to, with a *kedg* or *light* \rightarrow , very fine holding ground. There are *soundings* a little farther to the southward, and more over on the *Sumbawa shore*, but very deep water, 80 and 90 fathoms *rocky* bottom.

There lies off the *pitch* of the *point* of *Lombok* a *small rock above water*, not unlike a high *canoe* without a *sail*, distant from the *main* about half a mile. When you come to round the *point*, you will then open a *very fine deep bay*, which shall call *Lombok Bay*; in it good \rightarrow ground and well sheltered from the *southerly winds*, which we found to blow very strong through the day, setting in with it a very strong tide. The *soundings* are regular, from 55 gradually decreasing, as you approach the *North part* of the *bay* and the *Lombok shore*, to any *depth* of *water* you please; *fine stiff sandy bottom*, having five fathoms two cables length from the *rocks*, which extend along shore for several miles to the northward and southward of *Bally Town*; they are mostly *dry* at *low water*, and distant from the *beach* about two cables length: inside of them is a *fine sandy bottom*, where the large *Malay* prows lay to take in their cargoes, chiefly *rice* and *paddy* for the adjacent islands. Saw a great many of the *nutmeg* and *cloves* for sale, but I believe not of their own production.

S f f

We

We found the inhabitants a very friendly and fair dealing people, as any ever met with in eastern countries, or, indeed any where else.

Bally Town is delightfully situated on the side of the small river; where we watered, it being exceedingly convenient for that purpose, having only about a 100 yards to roll your casks to where they are filled; your boat may lay close to the beach, if flood-tide, abreast of where you roll your cask to. You must take care and get *without* the reef before low-water, otherwise must remain till *quarter flood* again,

The *ebbing* and *flowing* of the tide in shore is regular, rising in *spring tides* 12 or 13 feet; *high-water* full and *change*, at half past nine o'clock.

At this place were plentifully supplied with every refreshment that is necessary after a long voyage, such as *bullocks*, *buffaloes*, *goats*, *fowls*, *ducks*, remarkable *fine rice*, *sago-flour*, &c. &c. *Fruit* of all sorts exceedingly reasonable; *buffaloes* were four and five dollars. and *bullocks* seven. They are fond of *red cloth*, *muskets*, *knives*, &c. but will not barter their *cattle* for them: however, cheap large cutlery is the best and readiest way to procure *fowls*, *fruit*, or any thing in the small way.

In the *South entrance* of the *strait* the *current* or *tide* is very irregular, both in respect to *its course* and *times* of *shifting*; it is, however, pretty strong whichever way it sets, 2, 3, and $3\frac{1}{2}$ knots per hour when strongest. When you are fairly entered into the *strait*, you have then a *regular current* setting NNE. and SSW. all through the *strait*, but by far the strongest to the *northward*, and generally a great deal longer, than that which sets to the *southward*.

The *Peak* of *Lombock* is situated on the NE. part of the *island*; it is a very remarkable high *double-peaked mountain*, which may be seen at sea 24 or 25 leagues: when off the *mouth* of the *Strait of Lombock* six or seven leagues, it is then very plain to be seen topping over the *western high land* of the *island*.

Half way through *this Strait of Allas* lies a *low island*, on the *Lombock shore*, off which runs out a *reef* to the South-eastward, about $1\frac{1}{2}$ mile from it: the *strait* is *narrowest* at *this place*, formed by a *cluster* of *islands* on the *Sumbawa shore*, which project a good way out; they are *steep* too, and *tolerably high*. In passing *Rocky Island*, distant $2\frac{1}{2}$ miles, had 36, 36, 37, 40, and 50 fathoms, and when a little to the *northward* of it; no more soundings all through, on either shore, with 100 fathoms line.

Know of no danger in *this strait*, but what is perceptible; so that it is, without doubt, the *clearest*, *safest*, and *best passage* of all the *straits* to the *eastward*.

The

The following ACCOUNT of BOMBAY ISLAND and HARBOUR is Extracted from Mr. JOHN McCLUER's SURVEY of the COAST of INDIA, Surveyed by Order of, and at the Expence of the EAST INDIA COMPANY, in 1787 and 1788.

Bombay Flag-Staff, from my best Observations, lyes in Lat. $18^{\circ} 56' N$? the Longitude not exactly determined. The *Island*, by the *Fort*, is near a nautic mile in breadth, and $6\frac{1}{2}$ from North to South. The harbour is very commodious and safe, and the soundings are regular, except where the few dangers are, namely, the *Middle Ground*, *Sunken Rock*, *North end of Tull Shoal*, and the *SW. prong of the Reef*; near these, the soundings give little or no warning.

The *Tides* are *irregular*, in the *set*, and *time of high water*, at different places in the harbour; within the *middle-ground* it is high water at $11^h 15^m$ and at *Mazagon*, or the upper part of the harbour, 30^m sooner; at the *reef* 45^m later. Where the Ships lye within the *middle-ground*, the Tide runs; N^oE. and S^oW; up the harbour it is affected by the draught of *Tannah Channel*; and down it by *Penn river*, and *Caranjar Channel*; here, and off *Tull shoal*, the Tides run nearly East and West, which circumstance proves of great advantage to ships working out in the Monsoon. Over, on the *reef*, for the first quarter, the Tide sets SW^oW, but when the rocks appear, it sets more Southerly, or along with the direction of the *reef*; and the Flood in the opposite direction.

When the sun is to the Southward, or in the Months of December and January, there is a difference of near two feet between the Day and Night-Tides on the Springs, the Night-Tides being the highest; but in the Months of June and July, the contrary is the case, which is convenient for the work at the docks, as it is carried on at day-light during the Monsoon weather. On moderate springs there is generally a rise of 16 or 17 feet at the dock gates.

The *Lighthouse* stands near the South extremity of *Old Woman's Island*, now called *Collaba*. It is near three nautic miles from *Bombay Flag-Staff*, bearing from it S. $35^{\circ} 30' W$; and S. $21^{\circ} E$. from *Malabar Point*. This building is of a circular form, and has within it a winding stair to go up to the top, where the light is, which must be upwards of 150 feet from the horizon at high water, and may be seen in clear weather

at 7 leagues distance, or in 20 fathoms water. A regular watch, night and day, is kept here; and it is supported by the vessels which sail to this Port, paying one rupee for every 10 tons burthen.

Dangers off
Collaba.

The *Point of Collaba*, on which the *Lighthouse* stands, is guarded on all sides by an extensive reef of rocks divided into prongs: the *first* and *most dangerous* of which is the SW. then the SE. the *Lighthouse Spit*, and *Elephanta Spit*. I think it will be most eligible to treat of them separately.

SW Prong.

The SW. *Prong* lyes from the *Lighthouse* S. 40° W. near 2½ nautic miles distant, and is dry at low water near 100 yards from the South end. It decreases gradually from the Island to the SW. end of it. A vessel ought never to approach so near this danger, as to have a hard cast upon it, nor come under 7 fathoms, at low water; for, from 6 fathoms, the ship may be ashore before the lead can be hove again. In the day time Mr. *Nichelson's* mark is a very good one, keeping the *Funnel hill* touching the N° brow of *Great Caranjar*, or that part of the hill E. ¼ N: If the *Funnel* is not perceivable, do not shut in a *white building* to the Northward of *Malabar Point*, till the *nob*, or Western hummock, on *Tull Point*, is on between two paps on the high land of *Tull*, then haul in for the SE. *prong*, East or EbN. according to the time of tide.

SE. Prong.

This is called the SE. *Prong*, but it is more of a round bank than a prong. Here is little or no danger, as a vessel may steer continually by the soundings. In the night, after rounding the SW. *Prong*, stand in East or EbN. till the *Lighthouse* bears North, then endeavour to get a hard cast upon the SE. *Prong*, which will direct you for the *sunken-rock*. With the *Lighthouse* N. ¼ W. or NbW. and a hard cast 6 or 6½ fathoms, stand NEbN. with a *flood*, and NEbE. with an *ebb* tide, which will fetch near the *buoy*, or to the Eastward of the *sunken-rock*, that bearing E. 15° S. from the *Lighthouse*.

Lighthouse
spit.

Small Vessels that wish to come within the *sunken-rock*, will, by keeping the Island close, have overfalls of 2 and 3 fathoms upon the *Lighthouse-Spit*, which bears nearly ESE. from the *Lighthouse*; but if *Mazagon house* is not brought further in upon the *town* than the *Admiral's house*, the danger is avoided, and those bearings will lead, clear of all, within the *sunken-rock*, 3 fathoms at low water, soft ground.

When

When the *Lighthouse* and highest part of the *Elephanta Island* are in one, then off the *Elephanta-Spit*, which bears WSW from the *Lighthouse*. It is not very dangerous, as the soundings upon it decrease gradually; but 6 fathoms is close enough. This Spit is an excellent mark or guide for the *Reef* in the night, coming from the Northward. After passing *Malabar Point* in 7 or 7½ fathoms low water, keep along South or SbE. till the *Lighthouse* bears ENE; with these bearings, and a hard cast upon the Spit, 6 or 6½ fathoms, steer out South or SbW. to go clear of the SW Prong, which will be done when the *Lighthouse* is NEbN, then haul in as before directed, East or EbN, till the *Lighthouse* is N½W. or NbW, then stand for the *buoy* of the *Sunken-rock*.

To have a hard cast upon the SE *Prong* (or *round*) is of the utmost consequence in rounding the *Reef* in the night, because it is a guide for the *Sunken-rock*; and people, by not keeping the *Reef* close, get over on the *foul ground* of *Tull*: here, from mid-channel to either side, across the harbour, there is not a fathom difference, therefore it will be necessary to sound the *ground* close, especially with a Westerly wind and flood tide.

The *foul-ground* off *Tull*, I may reckon the most dangerous Shoal in the harbour; particularly when the *Nob*, or *Outer Point*, bears SE. with these bearings the Shoal is steep too from 6½ to 4 fathoms in one cast. I have known a ship's rudder to be unshipped in 6½ fathoms; you ought, therefore, never to stand nearer it than 7 fathoms in the Monsoon; or the West end of *Butcher's Island* touching the low hill at *Trombay*; or *Kennery* SbW. These marks are very well in clear weather, but in the Monsoon, the soundings and your own judgment are the only guides; this being the case, the leadsmen ought to be very careful in feeling the ground, whether hard or soft. Ships turning out in the Monsoon fetch near this *point* the first board, and are often obliged to tack before the 4th can be stowed: the 2d board will fetch the *Prongs*; the 3d will clear the dangerous part of *Tull*, or bring the *Nob* East, or even EbS. and the 4th board will clear all the danger of the *Reef*. It is reckoned best not to stand on the last mentioned tack further than to bring the *Lighthouse* NE or NEbE, but work at the entrance of the harbour during the Ebb. The Pilot generally takes his leave with *Kennery Island* SSE. or SEbS. which is clear of the harbour, and all its dangers.

After

Elephanta
Spit.

A Guide to
round the
reef.

Foul ground
off Tull.

Working out
of the Har-
bour.

To work for
an Offing in
the early
months of
the monsoon.

After having cleared the harbour, the grand object is to gain an *offing*, and to avoid \rightarrow ing. To accomplish these, attention must be paid to the winds, and time of the season. In the early months, the squalls hang to the Southward of West; in this case, I would keep in with the land during the ebb, for its assistance to get to the Southward all I could. By being well to the Southward of the harbour, the next flood is scarcely felt, and if the wind will admit of a NbW. course, good, I would stand off for four hours; then tack: In coming in with the land again the ebb would be made, and probably would admit of standing on, which I should do if I continued the same depth of water, and the next flood would gain a sufficient *offing*, 30 or 35 fathoms, and still be to the Southward of *Bombay*. In the later months, I would act differently to what I have said above.

To work for
an Offing in
the latter
months of
the Monsoon.

The latter end of July, and the month of August, the squalls haul well to the Northward of West; I have known Ships at this time stand direct from the harbour with a fair wind. However, as this is not always the case; when clear of the entrance of the harbour, I would stand to the Westward with the ebb, and to the Southward with the flood tide; and, if I could lye any thing to the Westward of South, the flood will have no bad effect. The strong freshes from the rivers, will be more than equivalent to the swell and leeway: I have often been obliged to stand in SEbS. and SE. to keep in the proper depth of water going down the Coast.

Bank to the
Southward
of Bombay.

To the Southward of *Bombay* is a *Bank* of soundings, which, to those who are not acquainted, is somewhat alarming, especially in working out for an *offing*. From 30 to lessen to 25 and 24 fathoms, causes them to imagine that they have lost ground, and are drifting in with the land again; when in reality they are going from the shore. The soundings will be shewn in the Chart of the *Survey*, from one extreme to the other. This *Bank* is an excellent guide for ships coming to *Bombay* in the SW. Monsoon, therefore I will give a more minute description of its utility.

Of falling in
with the
Land in the
SW. Mon-
soon.

The first caution is, to make a proper allowance for the Currents, which, in the months of May, June, and part of July, set Northward within the extent of soundings on this Coast, and are of great assistance to Vessels working up it before the SW. Monsoon commences. Half of July, August and September, owing to the heavy rains which fall in these months,

months, and the great outlets from the *Gulph of Cambay*, and the rivers to the Northward of *Bombay*, the Currents are changed Southward from 20 to 30 miles $\frac{1}{2}$ day, which rate seldom fails; an allowance accordingly may be made. The plan now followed, by most people, is to keep off the Coast, till near the Latitude of *Bombay*; by which means they have a better chance of obtaining their exact observations, as being in clear weather, (for the squalls and heavy rains on this Coast seldom exceed the *Bank of Soundings*, or above two degrees from the land; and the weather, in a great measure, denotes your approach to the shore.) After being in the Latitude of the entrance of the harbour, they stand in due East, and having such a great distance to run on that point, the Ship is often some miles to the Northward, or Southward, of the Port, owing to bad steerage and other incidents. If in the early months of the SW. Monsoon you make to the Northward of the harbour, it is a dangerous mistake, as the winds hang Southerly when *in* with the Coast, and the seas run so very high, that it would be a very difficult matter to work to the Southward; but in such a case, advantage must be taken of the tides, keeping in shore with the ebb, and off with the flood tide: if moderate, \rightarrow . In the months of August and September, it is not so dangerous getting to the Northward of the Port, as the squalls haul more Northerly, and the Current sets strong to the SW. owing to the freshes from the rivers, and *Gulph of Cambay*. To prevent all accidents of this kind, we have lately made a perfect discovery of the *Bank of Soundings* to the Southward of *Bombay*, which will be seen in the Chart, and in my opinion, the most eligible plan for falling in with the land about *Bombay*, is this.

If you can by any means obtain the Latitude, either by Mer. Alt. of the Sun, or double altitudes, fore or afternoon, or by the Stars, within 5, or even 10 miles of the truth, it is of little consequence: stand in for the land without fear, sounding every four hours in the night, till you get soundings: In the day, the Snakes will point out your depth of water, the large ones being in above 45 fathoms and the small ones in, and under that depth. Having obtained the Latitudes nearly, by any of the above methods, stand in for the land, between the Latitude $18^{\circ} 15'$ and $18^{\circ} 30'$ North, till you strike soundings on this *Bank* to the Southward of *Bombay*, from 22 to 26 fathoms *coarse sand* and *small shells* of various

fall in
th the
nk of
undings to
e South-
nd of
mbay.

various colours. With these soundings stand along the *Bank*, under an easy sail, about North or NNE. noting your soundings each hour, 'till you get off the *Bank*, and deepen the water to 30 or 32 fathoms, then you are certain of the situation of the ship, and may shape a direct course for the entrance of the harbour.

Depth on the
Bank.

It is to be observed, that during the traverses backwards and forwards upon this bank, we never had less than 22 fathoms, as will appear by our Logbook, therefore Mr. *Nichelson* must have been misinformed by those who said that there is 16 fathoms on it, for I will venture to say there is no such Soundings on this *Bank*, unless it is in a very small spot indeed; nor have I heard any one affirm they got such soundings on it.

DIRECTIONS for NAVIGATING the GULF of CAMBAY. By WILLIAM
AUGUSTUS SKYNNER.

From *Surat* to the northward keep in 10 or 13 fathoms water, and 3 or 4 miles from shore, which will carry you between the inner and outer sands off *Swallow*; the outer is 6 miles from the shore, and the inner 1½ mile, both which are dry at low water spring tides. When *Cutcherde* Tree bears EbN. (which is known by a large single Brab Tree upon a low point) keep out WbN. till you have the following bearings on: *Bogway* Point NE½E. *Donda* EbN½N. *Cutcherde* Tree EbS½S. (then clear of *Goolwaller* Sand to the westward; soundings from 10 to 14 fathoms) steer NbW. which will carry you safe into *Baroche* Road from 14 to 8 fathoms, where you may safely ⇄ with the following bearings, *Baroche* Point NbE½E. *Cutchajal* SE. *Peram* Island W½N. Distance from the point 4 or 5 miles, 6 fathoms at low water. The bar lies in the latitude 21° 33' N. High water on full and change 30 minuets past four o'Clock, ebbs and flows 5 fathoms, and runs 6 miles an hour.

To the southward of the bar is *Baroche* Sand, which lies N. and S. It is 3½ miles long, and 1½ broad, and within 50 yards of either side from 2 to 3 fathoms deep; between it and the inner sand (which runs from the shore 5 miles here, and continues as far to the southward as *Tanar*,
the

the breadth decreasing, and dry at low water spring tides) is a good channel to the Bar from 7 to 3 fathoms water, and $1\frac{1}{2}$ mile broad: mark for it thus, bring *Peram* Island WNW $\frac{1}{2}$ W. steer in with it until *Baroche* Point is NbW $\frac{1}{2}$ W. then haul up for it till you have *Peram* Island W $\frac{1}{2}$ N. which will carry you a-breast of the Bar in 3 and 4 fathoms at half a mile distance.

There are two Sands off *Bogway*, called *Goolwaller* and *Bogway*, which are dry at low water spring tides: the former lies N. and S. is $4\frac{1}{4}$ miles long, and half a mile broad; lies off shore from *Donda* $6\frac{1}{4}$ miles: the latter lies NbW. and SbE. is $5\frac{1}{2}$ miles long, $1\frac{1}{2}$ mile broad at the North end, and at the South end $2\frac{1}{2}$ miles; the distance from the shore $3\frac{1}{2}$ miles; and within 20 and 30 yards of each Sands 3 and 4 fathoms water: between these Sands is a good channel to sail or work through in the day-time, but excessively dangerous in the night, for you cannot depend upon your soundings, therefore in the night would advise to go to the Westward of *Goolwaller*: the channel between the Sands is from 2 to $2\frac{1}{2}$ miles broad, and the soundings from 5 to 9 fathoms.

From *Baroche* to *Jumbaseer* keep within 3 miles of the shore in 7 or 8 fathoms low water; and in working do not stand at any time above 2 leagues off from 8 to 10 fathoms, because the tide runs so very rapid, that in case its falling little wind, you would meet with great difficulty in getting in shore again: from the shore a flat runs off $1\frac{1}{2}$ and 2 miles dry at low water spring tides, and continues from *Jumbaseer* to *Dagom*. To the Northward of *Jumbaseer* in some places it runs 4 or 5 miles from the shore; close to it from 4 to 7 fathoms water.

Jumbaseer Road lies in the latitude $21^{\circ} 49'$ North, known by a Pagoda on the North side of the entrance of the river called *Dieu*: the mark for \rightarrow ing is the aforesaid Pagoda NEbE. $\frac{1}{2}$ E. *Jumbaseer* Point EbN. in 7 fathoms low water, dry part of the Flat $\frac{1}{2}$ a mile distance, and from the Pagoda 4 or 5 miles; with the aforesaid bearings on you will have very little tide, and lye with great safety, the North part of the Flat breaking the strength of the tide. High Water on full and change 48 minutes past four o'clock, ebbs and flows 6 fathoms. This is a great place of trade for cotton, grain, and oil.

The distance from *Jumbaseer* to *Gongway* is 6 leagues, with a Channel $1\frac{1}{2}$ mile broad, but very dangerous, the tide running with such amazing velocity; soundings from 7 to 2 fathoms first quarter flood: in going keep within a quarter of a mile of the Flat in 2, 3, and 4 fathoms, until you have brought a small Cluster of Trees East, then haul in for the Shore, keeping within 200 yards of it up to *Gongway* Road, and when a-breast of the Town, may safely \rightarrow

T t t

about

about 80 yards from high water mark, where you will ground at first quarter ebb; it is dry over the Bay from the latitude of $22^{\circ} 3'$ North to *Cambay* at low water spring tides. No vessels attempt to go above *Gongway* in a tide from *Jumbaseer*, as it is attended with bad consequences; for if they cannot get into *Cambay* Creek, must return to *Gongway*. High water at *Gongway* quarter past five o'clock on full and change.

It is 5 leagues from *Gongway* to *Cambay*, which lies in the latitude of $22^{\circ} 24'$ North. At first quarter flood they always weigh and stand over, keeping the Pagoda (at *Cambay*) bearing NbE $\frac{1}{2}$ E. and in working from NbW. to NEbN. the soundings are from 2 to 4 fathoms. You must keep the shore close aboard, untill you are to the northward of *Dagom*, meeting with great overfalls, and the tide running so rapid, that if the vessel should take the ground she must overset immediately, and in all probability every soul perish on board, which often happens through the neglect and obstinacy of the pilots. N. B. The tide sets NE. and SW.

From *Surat* to *Gogo*, keep as mentioned in the remarks from *Surat* to the Northward, until you get clear of *Goolwaller* Sand to the Westward, then steer over for the Island of *Peram*, keeping to the Eastward about $1\frac{1}{2}$ mile in 14 and 15 fathoms to clear the Reefs that run off it, being very dangerous, and environed with Rocks and Shoals. When it bears SW. steer NNW. (soundings from 11 to 9 fathoms) until you get the following bearings on, the body of *Peram* SbE $\frac{1}{2}$ E. *Kourab* Point SSW. *Gogo* ditto WNW. then haul up for the body of *Gogo* Town, which will carry you clear of *Gogo* Sand; soundings from 10 to 3 fathoms. When the following bearings are on, you may \rightarrow with great safety; *Gogo* Point WbyS. *Kourab* ditto SbE $\frac{1}{2}$ E. House on *Peram* SSE $\frac{1}{2}$ E. distance from shore half a mile in 3 fathoms low water. The town lies in the latitude $21^{\circ} 44'$ N. is a safe Roadstead in the SW. Monsoon, where vessels may run to in case they happen to part from their \rightarrow s in *Surat* Road, it being an entire bed of mud for three quarters of a mile from shore, and always smooth water. Ships may here get supplied with stores and provisions, and repair any damages they may have sustained; the natives, who are principally Moors, build ships and vessels from 50 to 300 tons burthen. Directions for vessels to make their Passage to *Bombay* in the months of *May* and *June* from *Surat* Bar, or in case they are drove from their \rightarrow s, which frequently happens in those months through the violence of the SW. monsoon, and a heavy swell setting in upon the flood. You should either make for *Gogo* as before directed, or stand over for the *Sultanpore* shore, as soon as clear of the SW. part of *Goolwaller* Sand, which may be gained (from *Surat* road)

road) by the last quarter flood (to run up) and half ebb, and then work down along shore to *Dieu Head* by the assistance of the tides: The shore is bold from *Groapnaught Point*, till within 5 miles of the east part of *Dieu Island*, when an offing of 4 or 5 miles must be given, there being a reef of rocks running to the SE. 2 miles. When the vessel gets as low as *Dieu Head*, she must stand off with an ebb tide, which will carry her clear of every thing, and fetch *Bombay* without making the land before entered its latitude, which should be attended to, for the tides upon the Neaps have not sufficient strength to contend with the great Western Swell that sets upon the shore at the above season of the year between *Basseen* and *Bombay*, which renders it difficult for heavy ships to get an offing. I have known vessels to have been several days in getting one of 4 or 5 leagues; and have been myself, in going to *Surat*, not got 4 leagues off, when a-breast of *St. John's*, and with much trouble, not without danger, cleared the Rocks which surround that Cape.

For *Baroche Bar* and River. Bring *Baroche Point* NbE. *Peram* W. $\frac{1}{2}$ N. the entrance of the river ENE. steer for it. *Baroche Point*, when NbW $\frac{1}{2}$ W. haul up NEbE. soundings from 6 to 21 fathoms at three quarters flood spring tides. When the aforesaid point is NW. westerly, steer NEbN. from 5 to 3 fathoms, until you have the North Shore aboard, and then keep along it at 20 yards distance. [This is the place where the northern Galliot's lie for the merchant boats, and is just within the bar.] When you have got *Coleycat* north, steer EbS. and when NW. steer SE. from 3 to 8 fathoms. When the two Brab Trees on the *Baroche* shore bear NNE. haul up for them until you are within 10 yards of the shore from 5 to 9 fathoms, which you must keep close aboard. When two Pagodas on the north shore bears NbE. keep out SbW. into Mid Channel, to avoid a shoal that runs one-third over the river from the *Baroche* shore (upon it at high water 1 fathom) soundings from 4 to 2 fathoms. *Barbouch*, when NEbE, steer for it from 3 to 9 fathoms: When a-breast of the town you will have 6 fathoms at low water, where a vessel of any burthen may lie with safety. From the aforesaid town to *Baroche* the banks are from 12 to 20 feet high, which you must keep close aboard, there being little water upon the southern shore; but off *Baroche* a vessel may \leftrightarrow within 30 yards off it, and will have 4 fathoms at low water. N. B. The tide ebbs and flows at spring tides upon the bar 2 $\frac{1}{2}$ and 3 fathoms.

Mark for *Swallow Sand*. *Swallow Point* EbS $\frac{1}{2}$ S. *Vauxe's Tomb* SEbE $\frac{1}{2}$ E. These Bearings are upon it: Clear to the northward is *Swallow Point* ESE $\frac{1}{2}$ S. *Vauxe's Tomb* SE $\frac{1}{2}$ E. *Cutcherée Tree* ENE. *Donda* NEbN. 9 fathoms;

and to the southward *Swallow Point* $E\frac{1}{2}N$. *Donda* NNE. *Vauxe's Tomb* EbS. in 3 fathoms low water.

For *Bogway Sand*. *Cutcherée Tree* $SEbE\frac{1}{2}E$. *Donda* ENE. *Bogway Point* $NEbN$. is upon it. Clear to the northward *Donda* ESE. and *Bogway Point* $NE\frac{1}{2}E$. in 4 fathoms; and to the southward *Donda* $NE\frac{1}{2}E$. *Cutcherée Tree* $E\frac{1}{2}S$. and *Bogway Point* NNE. in 7 fathoms low water.

For *Goolwaller Sand*. *Bogway Point* $NE\frac{1}{2}E$. *Cutcherée Tree* ESE. *Donda* $E\frac{1}{2}N$. is on it. Clear to the northward *Bogway Point* $E\frac{1}{2}N$. *Donda* ESE. the Tree SE. in 5 fathoms. To the southward, *Donda* $EbN\frac{1}{2}N$. *Bogway Point* $NE\frac{1}{2}N$. and the Tree $EbS\frac{1}{2}S$. in 8 fathoms low water.

For *Baroche Sand*. *Cutchajall* $SEbE$. *Peram Island* WbN . *Baroche Point* $N\frac{1}{2}E$. These bearings are upon the middle of it: *Peram Island* $W\frac{1}{2}N$. *Baroche Point* $N\frac{1}{2}E$. is clear to the northward in 3 fathoms. *Cutchajall* $EbS\frac{1}{2}S$. *Peram Island* $WbN\frac{1}{2}N$. and *Baroche Point*, as before-mentioned, is clear to the southward in 6 fathoms low water.

CAPT. TAYLOR'S REMARKS, in SHIP CERES. Friday, December 31, 1779.

At 9 AM.—Saw the land appearing like a sail, and bearing $NEbN$.

At 11 AM.—The weather clearing up had very good observations of the sun and moon, by which I make *Hog Island*, in long. $96^{\circ} 10'E$ from Greenwich and in latitude $2^{\circ} 15'N$. The Variation the same day $1^{\circ} 20'W$. steered away NW. until 10 PM when she broke off to N. Rain and thick weather.

At midnight—Saw the land appearing very low and at the distance of $1\frac{1}{2}$ or 2 miles no ground 90 faths. Tacked and kept her head off the land until day light, when the small island which lies a little to the westward of *Hog Island*, bore about EbN 6 or 7 miles and the Extreme of *Hog Island* from NNW to E, off shore 5 or 6 leagues: We were much surprised at day-light seeing no land resembling the low land which alarmed us at Midnight; however as I observed the Current setting strongly to the NWestward by our altering the bearings of the land so fast, I am convinced we were very near the small Island which lies to the Westward of *Hog Island*, and if there are any such Rocks as I find laid down in some Charts surrounding the NW. part of it,

it, I am clear we must have been very near them at Midnight, although too far off to see them at day light.

At Noon Saw the *Cocos* Islands bearing NWbN. about 4 leagues. They are two small Islands covered with trees, lying rather to the Northward, and about 18 or 20 miles to the Westward of *Hog Island* observed Breakers off the Westernmost Point of them, but no dangers any where else, there appears a good passage between them; the Wind coming too far northerly to permit us weathering them, bore away, and went through between them and *Hog Island*; The passage seems to be very clear and good; steered N and NbW; found a Current setting NbE, about 1 mile $\frac{1}{2}$ hour.

Next day saw the Coast of *Sumatra* from NbE to NE. about 10 or 12 leagues distant; Coasted it along for 4 days, from 10 to 12 leagues distant from the land, with light winds chiefly from the NW, Rainy and unsettled weather, found the Current setting to the NW. and SW. but were generally about 12' to the Northward of account in the 24 hours. Ships that are desirous of making this Coast, should I think endeavour to avoid falling in with it under 3°N, as the Coast to the Northward of that seems quite clear and good soundings from 60 to 30 fathoms, sand, and even in the night Ships may have soundings 6 or 7 leagues from the land, besides that it is very tedious getting to the Northward at this season, the winds being so faint and mostly from the NW; the Coast to *Acheen* head lying about NW and SE; there seems to be no danger of losing the Coast after it has been seen, therefore I think it would be adviseable to stand off the land, to have fresher winds, and make a good stretch to the Northward, or to Coast it along in Soundings, and \rightarrow when the Tide makes to the SW.

I made 38 miles W. from *Hog Island* to *Acheen Head*, which by our last observations of the longitude, makes it in longitude $95^{\circ} 32' E.$ from Greenwich and in latitude $5^{\circ} 22' N.$

From seeing *Acheen Head* we were two days in getting to the northward of *P^o Rondo*, with light airs from W. and SW. fair and clear weather: Found a current of about 14 or 15 miles to the northward in the 24 hours; When abreast of the islands, although quite calm found the ship driving fast to the northward, and on upon the islands to the eastward; upon trying the current or tide frequently found the NE. tide $1\frac{1}{2}$ miles $\frac{1}{2}$ hour, and the SW. not above $\frac{1}{4}$ a mile $\frac{1}{2}$ hour. The change of weather was very remarkable as soon as we opened *Acheen Head*, from having cloudy weather with almost constant squalls and rain ever since we made the coast of *Sumatra*, and the wind

winds exceedingly variable, immediately, when we got to the northward of the *Acheen Islands*, had pleasant and steady breezes from E. to ENE a clear and most serene sky, the water exceedingly smooth, and scarcely a cloud to be seen in the whole hemisphere.

January 9th. Took my departure from *P^o Rondo* allowing it to be nearly upon a meridian with *Acheen*, and in latitude $6^{\circ} 5' N.$ instead of $5^{\circ} 50'$ as laid down in the Directory and placed in the charts with the same error.

N. B. This error of $15'$ in the latit. of *P^o Rondo* is very well worth attending to, as it is but a small island and has a most dangerous Reef of Rocks which reaches almost half way between it and *P^o Way*, with a constant easterly drain into the mouth of the straits of *Malacca*, in the night time, or in thick weather with light winds, a Ship may get so near as not to be able to go to the northward of it, and obliged to pass through between it and *P^o Way*, which is an exceeding dangerous passage, which no man ought to attempt if he can any ways avoid it. There is a safe passage close to *P^o Way*; in light airs the flood which sets to the NE might force a ship upon the reef, and the common advantages of \rightarrow ing is hardly to be met with near any of these islands there being no soundings close to them.

From *P^o Rondo* to $12^{\circ} N.$ latitude had pleasant breezes from the eastward, which enabled us to make our course from NbE. to NbW. from 90 to 100 miles φ day. January 12th. Per Medium of 13 good sights of the longitude found ourselves in $93^{\circ} 36'$ longitude from Greenwich, which is $1^{\circ} 33' W.$ since last sights and by the charts is nearly the longitude of the islands, laid down in 12° and $11^{\circ} 30' N.$ latitude, by the name of *Barren Islands*. Kept a very good look out in the night and sounded as φ log; next morning at day light saw a pretty large island bearing NE $\frac{1}{2}$ E, 10 leagues. The extreme of the *Andamans* (just in sight) from WNW. to SWbS. 9 or 10 leagues. Till noon, that we had a good observation, could not determine whether the island in sight, was the northernmost *Barren Island* or *Narcondam*; We observed in $11^{\circ} 59' N.$ the latitude of the northernmost *Barren Island* as laid down in the charts; The Island bearing NEbN between 8 or 9 leagues distant which makes it come nearest the latitude of *Barren Island*—A day or two afterwards by a very good Observation within 2 or 3 miles from the N^o end of it, find its latitude to be $12^{\circ} 20' N.$ (21 miles to the Northward of its situation upon the Charts) and its longitude, by several very good Observations of the \odot and \sphericalangle , to be $93^{\circ} 10' E.$ from Greenwich.

The

The nearest of the *Andaman* Islands we could see bearing SWbW. from it 18 or 20 leagues—As for the Southernmost *Barren Island* we concluded that it did not exist, or if it did that it must be very erroneously placed in the Charts for the day after we saw *Barren Island* we were set to the Southward in endeavouring to pass to the Eastward of it, and at Noon had the Island bearing from NbW, to NNW. 12 leagues and observed in $11^{\circ} 48' N.$ which is nearly the southernmost *Barren Island* (as laid down) notwithstanding which, saw no such island although the weather was very clear; Since which time I was informed by the Captain of a Portuguese Schooner that he had seen both the islands, the southernmost being situated much farther to the westward than laid down.

I likewise have it from good authority, that Captain Charrington of the Bahar country ship saw the rocks under his ship's bottom and sounded in 4 fathoms. *Barren Island* bearing NNW. 5 or 6 leagues. In the Charts there are some dangers laid down to the southward of the southernmost *Barren Island*, I imagine it is meant to be placed to the southward of the northernmost as I think it seems doubtful whether there are but one or two islands. The island of *Narcondam* bears NbE½E. 23 leagues distant from *Barren Island* in latitude $13^{\circ} 26' N.$ and longitude $93. 30. E.$ from Greenwich, both ascertained from very good observations. The islands *Narcondam* and *Barren Island* appear very differently when seen at some distance; so that, independant of their latitudes, with a simple sketch of each island a man could be at no loss readily to know one island from the other. *Narcondam* makes like a sugar loaf, quite flat at the top, and may be seen at least 18 leagues from the mast head, for we saw it 13 or 14 leagues from the poop pretty high out of water, the weather rather hazy; this distance may be depended upon as it is calculated from the bearings and differences of Latitude.

Barren Island appears much longer, but not quite so high; the westernmost extreme is the highest, and makes with a Peak, descending to a low point to the eastward, although when you come near it, it seems of an equal height, with a peak at each end; It may be seen at least 15 or 16 leagues, for it was high out of the water when we saw it bearing NbW 12 or 13 leagues distant & calculation.

January 17th, Saw the *Cocos* islands bearing NWbW. 9 or 10 leagues; they bear NWbW½W 26 leagues distant from *Narcondam*, the southernmost island is in latitude $14^{\circ} 0' N.$ and longitude $92^{\circ} 10' E.$ from Greenwich by good observations of the ☉ and ☾. The latitude is calculated from its bearing

bearing E. of January 17th, at 11. P.M. to the preceeding, and following meridian observations. There is a very good passage between the *Cocos* and the N. end of the *Andamans*, with regular soundings from 20 to 40 fathoms fine white sand with small shells, although we had some casts of rocky ground. The Channel seems quite clear and good; I imagine the distance from the *Cocos* to the north end of the *Andamans* to be at least 15 or 16 leagues: for in passing through outward bound saw no land to the southward of us from the mast head although the weather was very clear, but in passing through homeward bound could just see the *Andamans* bearing SSW. distant from the *Cocos* 5 or 6 miles, ground 34 fathoms. The *Cocos* islands are very low land and I think cannot be seen more than 8 or 9 leagues from the mast head, by our distance run from seeing them first we did not see them so far but I am of opinion we had a considerable westerly current in our favour, and homeward bound in the month of April, the current set strongly to the eastward through the passage, and carried us through without any wind; in all probability it was the tide which happened to favour us both times, for both out and home we found a westerly set within the islands.

January 18th, Took my departure from the *Cocos* steering close hauled to the NW. with pleasant breezes from NE. to ENE. going at the rate of 4 or 5 miles $\frac{1}{2}$ hour with clear weather; when we got between 18° and 19° N. Lat. had light winds, more Easterly than before, which soon ended in almost entire Calms with a settled haze in the Horizon, we seldom went more than 10 or 15 miles in the 24 hours, tried the Currents frequently and found they set all round the Compass, but by our daily Observations of the Latitudes found a set of 8 or 10 miles to the Northward every day; and by an Observation of the Longitude January 26th found we had been set a degree and a half to the Eastward since we left the *Cocos*.—As far as $18^{\circ} 30'$ N. Lat. had pleasant fresh breezes from NE. since which have been 10 days in getting 2 or 3 degrees of Lat. and little or nothing to the Westward: had very good observations of the Longitude 5 or 6 following days, from 10 to 15 miles to the Eastward or Westward every day, and never above 20 miles distance by our Log.

January 31. Had the good fortune to fall in with Mr. Gilbert, Pilot, he told us we were then about $10'$ or $15'$ to the Eastward of the Eastern sea Reef which by Mr. Richie's Chart is in $88^{\circ} 50'$ E. from Greenwich. He told us we might have been there a month longer unless we had got into less water, for we were out of the influence of the tides and that the general currents rather set to the Eastward: he recommended in case of falling in to the Eastward

(as

(as was our case) to keep in 20. faths. at spring tides, and in 17 faths. at neap tides, in order to benefit by them, otherways a ship might be some months in getting to *Balasore Roads*, there being almost constant calms to the Eastward from 18° 19° 20° and as far as 21° $10'$ N. Lat. at all seasons of the year, it would be very imprudent for any Ship, unacquainted with the sands, to come under 17 faths. taking care to \rightarrow as soon as the tides make against you, any ship may safely keep in that depth at neap tides, the tides set all round the Compass in the 24 hours. — The first of the Flood sets the Westward, coming round to the Northward and ends setting NE; the Ebb begins setting to the Eastward. — Arriving round to the SE, and ends setting to the westward. However to the Eastward the Tides are considerably influenced by the winds, following their course, in 50 fathoms water and above, the Easterly tides are the strongest. — In crossing the tails of the Reefs with a flood tide, Ships ought to be very careful to avoid being carried to the Northward between the sands, when thinking themselves to the Southward, may unexpectedly strike upon the *Braces*. In crossing the tails of the Reefs we had very near been carried into the Kill instead of *Ballasore Roads* — The Pilot thinking we shoaled our water too quick for *Ballasore* came to, as we afterwards found, to the Southward of the Western *Brace*; in going into *Ballasore Roads* the water shoals very gradually.

Next morning came on board Mr. Car, Pilot and took charge of the Ship (being his turn) Weighed and stood away to the NE into the *Kill*, and next morning weighed with a light air from W and SW, and crossed the Eastern *Brace*, the least water, mark under water 4 fathoms.

In rounding *Point Palmiras* no Indiaman ought to come under 16 or 17 fathoms, nor so near with an easterly wind.

N. B. Our passage to *Bengal* was most certainly prolonged 10 or 14 days (and might have been much longer had we not fortunately got a Pilot) by not stretching over for the Coast of *Coromandel* between the latitudes of 18° and 19° N. latitude or in short as soon as the NE Trade became faint, by which means we should have avoided the Calms which always reign to the Eastward and to the Northward of these latitudes; the Ships which frequent the Eastern passage, after the middle of December, always stand over for the Coast of *Coromandel* before the NE Trade or Monsoon fails them, as the Currents, after the middle of December, set to the N on that Coast, with regular land and sea breezes.

Taken from a Manuscript, which may be depended upon.

| | | |
|--|-------|-------------------------------|
| " The N side of Carnicobar | - - - | in Latitude $9^{\circ} 13' N$ |
| " The Island of Narcondam | - - - | 13. 25 |
| " The Northmost part of the great Andamans | - - - | 13. 13 |
| " The Easternmost of the Cocos Islands | - - - | 14. 4 |
| " The largest of the Sayer Islands | - - - | 8. 37 |
| " Monday Island | - - - | 12. 17 |

Monday Island which is not laid down in any of our Charts is a very dangerous rock in latitude $12^{\circ} 17' N$ and bears $N 37^{\circ} W$ distance 96 leagues from the largest of the Sayer Islands, It appears like a Long-Boat turned bottom up with 9 or 10 fathoms a league and a half to the westward of it, and 4 fathoms a mile distance. My authority is very good having received the account of it from Mr Monmortis, Captain of a Pegu Vessel, who told me he lay at \rightarrow several hours about a mile from the *Rock*, and had the above soundings; he likewise informed me of others, who had seen *Monday* Island but I have not the smallest reason to doubt his veracity, as I saw it pricked off in his Charts by his own hand.—It might prove very fatal to a Ship going that passage in the Night.

Two leagues to the NW of *P^o Way*, that is between *P^o Way* and *P^o Rondo*, are very dangerous Rocks, extending above a mile from *P^o Rondo*, pretty high out of the water: there is a safe Passage between them and *P^o Way*, keeping close to *P^o Way*, I saw the Rocks myself as \S Remarks.

Remarks on the Monsoons in the Bay of Bengalk.

The NE. Monsoon begins on the Eastern shore about the middle of November and continues until May, and frequently all the month of May; It begins upon the Coromandel Coast 2 or 3 Months sooner than on the eastern shore; the SW. Monsoon begins on the Eastern shore the end of May or beginning of June, and continues till the end of October or month of November. In November there are frequent squalls from the SE and SSE. which continue 2 or 3 days sometimes, which makes it convenient for ships bound up the Bay, at this season to keep the Eastern shore on board: The SW Monsoon begins on the Coromandel Coast, in the month of February; In coming down the Bay in the months of March, April or May you ought to keep the Eastern shore close on-board where you will meet with land and sea breezes, whereas all over the Bay you find light airs from the SW and SSW but chiefly Calms and Northerly Currents.—On the Eastern shore you will scarcely meet with any

any Current until you come within the draft of the Straits of *Malacca* where you find a strong Easterly Current, but if you happen to be carried into the Straits by it, stand to the Southward and make the Coast of *Sumatra* as soon as you can, when you will always find SE winds to bring you to *Acheen*.

From *Diamond Point* to *Point Pedro* there are soundings all the way at about 2 miles from the shore—during the SW Monsoon the Currents within the Islands set to the NE and the contrary on the Monsoon.

In the months November, December and beginning of January, Ships bound up the Bay to *Bengal* should come up within the Islands and pass through between the *Preparis* and *Junken Rock*, after which they may work up the *Aracan* shore just in sight of the land, indeed it's immaterial if they now and then lose sight of it, they ought not to come nearer than 10 or 15 leagues, by keeping that distance you have no Currents and regular land and sea breezes, the Sea Breeze comes in at about 3 o'clock in the afternoon and continues till 8 or 10 at Night, blowing from N to NNW and NW, when you should stand in shore; it is succeeded by the land breeze, which blows till 2 or 3 o'clock next day from NE and ENE, when you must stretch off.

When you come as high as the *Broken Islands* you may stand over for *Ballafore* roads, observing what has been mentioned before concerning the Tides.

In going through the Straits of *Malacca*, always keep the *Malay* shore on board untill you get as far as *Poelo Sambelon* or the North end of the North sand

On the other shore you have squalls, Calms, and the Currents against you.

In going through between the *Arroes* and *Parcelar Hill*, or the sand Heads never bring the hill to the Southward of East, nor to the Northward of EbN. the best track is E½N. and the *Arroes* W½S, never to the Northward of W untill you see *Parcelar Hill* which then is your guide.

A NEW AND CORRECT
ALPHABETICAL TABLE,
OF
LATITUDES AND LONGITUDES,

Chiefly in the INDIAN NAVIGATION.

N. B. The authorities marked T were taken from the last corrected Edition of Requisite Tables, and those marked R from Mr. G. Robertson's Memoirs of a Chart of the China Sea, &c. D Dalrymple, and H Capt. Huddart.

| | Latitude. | Longitude. |
|--|------------|-------------|
| T ADVENTURE Bay, Asia, New Holland | 43 23 0 S | 147 30 0 E |
| T Ditto Isle, Pacific Ocean | 17 5 15 S | 144 17 45 W |
| T Agra, India | 26 43 N | 76 44 E |
| T Aleppo, Turkey | 35 45 23 N | 37 20 E |
| T Alexandretta, Asia, Syria | 36 35 10 N | 36 20 E |
| T Alexandria, Egypt | 31 11 20 N | 30 16 30 E |
| T Algeirs, Africa | 36 49 30 N | 2 12 45 E |
| T Ambrym Isle, Asia, Pacific Ocean | 16 9 30 S | 168 12 30 E |
| T Amsterdam, Europe, Holland | 52 22 45 N | 4 45 30 E |
| T Amsterdam, Isle, Asia, Pacific Ocean, | 21 9 S | 174 46 W |
| T Ancona, Europe, Italy | 43 37 54 N | 13 30 30 E |
| T Angra, Europe, Tercera | 38 39 N | 27 12 15 W |
| T Anamoca, Asia, Pacific Ocean | 20 16 30 N | 174 30 30 W |
| T St. Anthony Cape, South America, Staten Land | 54 45 46 S | |
| T Antigua, America, St. John's Carib | 17 4 30 N | 62 9 W |
| T Antwerp, Europe, Flanders | 51 13 15 N | 4 22 45 E |
| T Apoe Isle, Pacific Ocean | 16 46 15 S | 168 27 30 |
| T Arica, America, Peru | 18 26 23 S | 71 11 W |
| T Aurora Isle, Asia, Pacific Ocean | 15 8 0 S | 168 17 E |
| R Abroegoes Shoal, ditto | 20 59 N | 136 38 E |
| R Arrow Islands, south part New Guinea | 7 6 S | 135 E |
| R Auro Pulo near the China Sea | 2 30 N | 104 38 E |
| R Anamba Great, ditto | 3 2 N | 105 50 E |
| R Ditto, the northwest ditto | 3 15 N | 106 3 E |
| R Ditto, the northernmost ditto | 3 55 N | 106 3 E |
| R Andrade Rock, ditto | 9 54 N | 109 54 0 |
| R Arrayas Island, Borneo, south part | 5 S | 115 36 |
| R Anna Pulo, Pacific Ocean | 4 38 N | 130 23 |
| R Anthony, St. Cape de Verde Island, south point | 16 58 N | 25 17 36 W |
| R Augustine St. Island Madagascascar | 23 36 29 S | 43 58 E |
| R Ascension Island, South Atlantic Ocean | 7 56 15 S | 14 32 W |
| R Achin Town, Sumatra | 5 20 N | 95 34 E |
| R St. Agnes Light, Scilly | 49 56 N | 6 46 W |
| B. | | |
| R Banditti Island near Bally | 8 46 S | 115 31 E |
| R Bouton Island, south-east point Pitts Passage | 5 48 S | 123 13 E |
| R Ditto, north end ditto | 4 25 S | 123 29 E |
| R Bourro, north-west point | 3 6 S | 126 21 E |
| R Bonoa Island, ditto | 2 53 S | |
| R Baby Pulo, near Straits of Sunda | 5 48 S | F |
| R Beachy Head, British Channel | 50 45 N | 19 40 E |
| R Boulogne, France | 50 43 31 | 1 38 E |
| R Brest, ditto | 48 23 | 4 30 W |
| R Belle Isle, south point | 47 17 | 3 5 W |
| | | Bordeaux |

| | | Latitude. | Longitude. |
|---|--|------------|-------------|
| R | Bordeaux, France | 44 50 | 34 30 W |
| R | Bayonne, ditto | 43 29 27 | 29 W |
| R | Bombay Coast, Malabar | 18 57 | 72 40 E |
| R | Bencoolen | 3 49 S | 102 E |
| H | Bencoolen, Fort Malborough | 3 45 S | 103 1 E |
| R | Ballafore, Bengal | 21 20 N | E |
| R | Beuennos, Ay. es, South America | 34 35 S | 58 31 W |
| R | Baffes the Great, near Island Ceylon | 6 10 N | E |
| D | Banguay Peake, ditto Island | 7 18 N | 117 17 30 E |
| R | Blanco Pedro, Straits Malacca | 1 20 N | 104 22 |
| R | Blanco Pedro, Coast China | 22 20 N | 115 8 |
| R | Bolingo Cape, Island Lucania | 16 18 N | 120 12 |
| R | Balabac Peak, Island of Balabac | 7 57 N | 117 15 30 |
| R | Botel Tobago Xima, near Formosa | 22 6 N | 121 42 E |
| R | Banca, north point Island Banca | 1 28 S | 105 48 E |
| R | Bornco, westernmost part | 1 23 N | 109 18 E |
| R | Batavia City, Island Tava (Jupiter's Satellite) | 6 9 S | 106 51 15 E |
| R | Bocca Tigris, China River | 22 48 3 N | |
| R | Brother Island, northernmost near Straits of Sunda | 5 9 S | 106 4 E |
| | Ditto, southernmost | 5 11 S | |
| R | Bantam point, Java | 5 54 S | 105 58 E |
| R | Bird or Blanc Island, Carimata Passage | 3 40 S | |
| R | Bumkins Island, Coast Java | 5 52 S | |
| R | Two Brothers near Pulo Laut | 4 24 S | |
| R | Banda, the Great Island, ditto Sea | 4 30 S | 130 38 E |
| R | Bouton Island, SE. point Pitts. Passage | 5 48 S | 123 13 E |
| T | Babylon, Ancient Asia, Mesop | 33 0 N | 42 46 30 E |
| T | Bagdad, ditto, ditto | 33 20 N | 43 46 30 E |
| R | Balafore, Asia, India | 21 21 N | 86 0 E |
| T | Balibea Island, Asia, N. Caledonia | 20 7 S | 164 22 E |
| T | Banguay Peak, Asia, Malacca | 7 18 N | 117 17 30 E |
| T | Barbis Cape, Africa, Sanhoga | 22 35 30 N | 16 40 W |
| T | Babuda Island Amer, Atlantic Ocean | 17 49 45 N | 61 50 W |
| T | Barcelona, Europe, Spain | 41 26 N | 2 13 E |
| T | Barnvelts, Island Amer, Terra del Fuego | 55 49 S | 66 58 W |
| T | Bassaterre, America, Guadeloupe | 15 59 30 N | 61 59 15 W |
| T | Bayonne, Europe, France | 43 29 21 N | 1 30 6 W |
| T | Bette, Bencoolen, Asia, Sumatra | 3 49 3 S | 102 0 E |
| T | Berlin, Europe, Germany | 52 32 30 N | 13 26 15 E |
| T | Bermudas Island, America, Atlantic Ocean | 32 35 N | 63 28 W |
| T | Blanco Cape of Negroland | 20 55 30 N | 17 10 W |
| T | Blanco Cape, America, Patagonia | 47 20 S | 64 42 W |
| T | Bojador Cape, Africa, Negroland | 26 12 30 N | 14 27 W |
| T | Bolabola Isle, Asia, Pacific Ocean | 16 32 30 N | 151 52 W |
| T | Bologna, Europe, Italy | 44 29 36 N | 11 21 15 E |
| T | Bartholemew Island, Asia, New Hebrides | 15 42 S | 167 17 30 E |
| T | Basil, Europe, Switzerland | 47 35 N | 7 29 30 E |
| T | Bear Island, America, Hudson's Bay | 54 34 N | 79 56 W |
| T | Bonavista Isle, Africa, Atlantic Ocean | 16 6 N | 22 47 15 W |
| T | Boston, America, New England | 42 25 N | 70 37 15 W |
| T | Botany Island, Asia, New Caledonia | 22 26 40 S | 167 16 45 E |
| T | Bourbon Island, Africa, Indian Ocean | 20 51 43 S | 55 30 E |
| T | Brest, Europe, France | 48 22 55 N | 4 30 50 W |
| R | Banditta Island, nearly Bally | 8 46 S | 115 31 E |

Cabello

| | | Latitude. | Longitude. |
|---|--|------------|------------|
| T | Cabello Port, America, Terra Firma | 10 30 50 N | 67 32 W |
| T | Cadiz, Europe, Spain | 36 31 7 N | 6 11 50 W |
| T | Caen, Europe, France | 49 11 10 N | 21 47 W |
| T | Cairo, Africa, Egypt | 30 2 44 N | 31 27 15 E |
| T | Canary Island, NE. part Canaries | 28 13 N | 15 38 45 W |
| T | Candia Isle, Europe, Med. Sea | 35 18 35 N | 25 18 E |
| T | Candlemas Isles, America, Sandhead Land | 57 10 S | 27 13 W |
| T | Canfo Port, Nova Scotia | 45 20 7 N | 60 55 W |
| R | Canton City, China | 23 6 55 N | 113 13 E |
| R | Condore Pulo, ditto | 8 40 N | 106 18 E |
| R | Capone Point Island Luconia | | 120 30 40 |
| D | Cagyan Soloo Island Mindoro Sea | 6 57 N | 118 51 0 |
| R | Crockatoa Peak, Straits of Sunda | 6 9 S | 105 22 0 |
| R | Carimata Island, N. point Coast of Borneo | 1 33 S | 108 50 0 |
| R | Carimon, Java Island, Borneo Sea | 5 50 S | 110 32 0 |
| R | Cloats Island by the English, near New Holland | 22 8 S | 110 0 0 |
| R | Ditto, Danish account | 22 0 S | 110 26 0 |
| R | Celebes NE. point | 1 50 N | 125 22 0 |
| R | Cambuys Island near Batavia | 5 49 S | |
| R | Christmas Island Indian Ocean | 10 34 S | 105 33 0 |
| R | Cape Clear, Europe, Ireland | 51 18 N | 11 15 W |
| R | Cork, Europe, Ireland | 51 54 N | 8 28 W |
| R | Calais, France | 50 57 30 N | 1 51 E |
| R | Cherbourg, ditto | 49 38 26 N | 1 37 W |
| R | Calcutta, Fort William, Bengal | 22 33 | 88 28 E |
| R | Comorin Cape, south point, Indian Peninsula | 7 57 | 77 47 E |
| R | Cochin, Malabar Coast | 9 58 N | 76 22 |
| R | Calemar point, Coromandel Coast | 10 20 N | |
| R | Cocos, or Kelling Islands, northernmost Indian Sea | 11 50 S | 97 8 E |
| | Ditto, southernmost, or Cluster from | 12 4 N | 97 8 0 |
| | | 12 23 N | 97 19 0 |
| T | Carlescroon, Europe, Sweden | 56 20 N | 15 2 15 E |
| T | Cathargena, Europe, Spain | 37 37 N | 1 8 30 W |
| T | Carthigena, America, Terra Firma | 10 26 35 N | 75 26 45 W |
| T | Casan, Asia, Siberia | 55 43 58 N | 49 8 15 E |
| T | Chandernagore, Asia, India | 22 51 26 N | 88 29 15 E |
| T | Cape Colinet, Asia, North Caledonia | 20 30 S | 164 56 E |
| T | Cape Comorin, Asia, India | 7 56 N | 78 5 E |
| T | Corvo, Europe, Azoris | 39 42 N | 31 6 W |
| T | Cumberland Cape, Asia, New Hebrides | 14 39 30 S | 166 47 E |
| T | Constantinople, Europe, Turkey | 41 1 24 N | 28 53 49 E |
| | D. | | |
| R | Desertas Islands, Northpoint, Madura | 32 37 N | 16 41 W |
| R | Dieupoint, India | 20 44 N | |
| R | Divicotta Coast, Coromandel | | 79 44 E |
| R | Dassen Island, Africa | 33 25 S | 18 2 E |
| R | Diego Garcia, or Bassos de Chagos Island | 7 30 S | 72 26 E |
| R | Diegos Rais, Indian Ocean | 19 40 S | 63 12 E |
| R | Docan Pulo near Banca | 1 4 S | |
| R | Danea Island, landing place, China River | 23 6 N | 113 29 |
| R | Direction Island, Coast of Borneo | 0 12 N | 108 30 |
| R | Donda Point, Celebes | 0 48 N | 120 39 |
| R | Dwaaldar Island, South Coast Borneo | 4 11 S | |
| R | Doogers Bank near Pulo Panjang | 39 N | 105 28 |
| R | Dublin, Europe, Ireland | 53 21 N | 6 6 30 W |
| | | | Dunkerque, |

| | Latitude. | | Longitude. | | |
|---|-----------|---------|------------|----|------|
| R Dunkerque, Europe, France | 51 | 2 | 2 | 23 | 30 |
| R Dieppe, Europe, France | 49 | 55 17 | 1 | 5 | E |
| T Dantzick, Europe, Poland | 54 | 22 N | 18 | 33 | 37 E |
| R Dassen Island, Africa, Caffres | 23 | 25 S | 18 | 2 | E |
| T Dennis St. Africa, Island Bourbonne | 20 | 51 43 S | 55 | 30 | E |
| T Diego Cape, America, Terra del Fuego | 54 | 33 S | 65 | 14 | W |
| T Dijon, Europe, France | 47 | 19 22 N | 5 | 2 | 23 E |
| T Disappointment Cape, America, South Georgia | 54 | 58 S | 36 | 15 | W |
| T Disfiada Cape, America, Terra del Fuego | 55 | 4 15 S | 74 | 18 | W |
| R Dominique Isle, France, Windward Isles | 15 | 18 23 N | 61 | 27 | 55 W |
| R Dover, Europe, England | 51 | 7 47 N | 1 | 18 | 30 E |
| R Dunnofe, Europe, English Channel | 50 | 33 30 N | 1 | 16 | 20 W |
| T Dungeness, Europe, England | 50 | 52 20 N | 59 | 6 | E |
| T Dusky Bay, Asia, New Zealand | 45 | 47 27 N | 166 | 18 | 9 E |
| E. | | | | | |
| T Eaoow Isle, Pacific Ocean | 23 | 24 S | 174 | 30 | W |
| T Easter Island, Pacific Ocean | 27 | 6 30 S | 109 | 46 | 45 W |
| T Edystone, Europe, English Channel | 50 | 8 0 N | 4 | 24 | W |
| T Enatum Isle, Asia, Pacific Ocean | 20 | 10 S | 170 | 4 | E |
| T English Road, Asia, Eaoowe | 21 | 20 30 S | 174 | 34 | W |
| T Enamanga Isle, Asia, Pacific Ocean | 18 | 46 30 S | 169 | 18 | 30 E |
| T Erzerum, Asia, Armenia | 39 | 56 35 N | 48 | 35 | 45 E |
| T Eustachia Town, America, Carib Sea | 17 | 29 N | 63 | 10 | 0 W |
| T Evouts Isles, Terra del Fuego | 55 | 34 30 S | 66 | 59 | W |
| R Engano Island, near Straits of Sunda | 5 | 35 S | | | |
| R Edem Island, near Batavia | 5 | 56 S | | | |
| R Esbe Harbour, Island Myfoli | 2 | 12 S | | | |
| F. | | | | | |
| R Ferdinando Noronha, South Atlantic Ocean | 3 | 55 S | 32 | 36 | W |
| R Friarhood Island, Ceylon | 7 | 16 N | | | |
| R Fort St. David, Coast Coromandel | 11 | 48 N | | | |
| R Formosa Island, South Point, Coast China | 22 | 6 N | 121 | 10 | E |
| R Freewill Islands, Pacific Ocean | 0 | 56 N | 137 | 0 | E |
| R Flores, North Point, Azores | 39 | 34 N | 31 | 6 | W |
| R Fayal, ditto | 38 | 32 N | 28 | 41 | W |
| R Ferro Island, Canaries, the town | 24 | 27 20 | 17 | 44 | 38 W |
| R Cape Finestre, Europe, Spain | 42 | 51 50 N | 9 | 17 | 15 W |
| R Falmouth, Europe, England | 50 | 8 0 N | 5 | 2 | 30 W |
| R False Cape, Africa, Caffres | 34 | 16 S | 18 | 44 | E |
| T False Bay, Africa, Caffres | 34 | 10 S | 18 | 33 | E |
| T Farewell Cape, Asia, New Zealand | 40 | 37 S | 172 | 41 | 30 E |
| T Forteventura, west part of Africa, Canaries | 28 | 4 N | 14 | 31 | 30 W |
| T Foul Point, Africa, Madagascar | 17 | 40 14 S | 49 | 53 | E |
| T Old Cape Francois, America, Hispaniola | 19 | 40 30 N | 70 | 2 | W |
| T Friesland's Peak, America, Sandwich Land | 59 | 2 0 S | 26 | 55 | 30 W |
| T Fuego Isle, Africa, Cape Verd | 14 | 56 45 N | 24 | 28 | W |
| T Funchal, Africa, Madiera | 32 | 37 40 N | 17 | 6 | W |
| T Furneaux Island, Asia, Pacific Ocean | 17 | 11 S | 143 | 6 | 40 W |
| G. | | | | | |
| R Gasper Island Peak, near Banca | 2 | 27 S | 107 | 4 | E |
| R Good Hope Cape, Africa | 34 | 28 S | 18 | 27 | E |
| R Ditto, New Guinea | 0 | 11 S | 133 | 6 | E |
| R Goa Coast Malabar | 15 | 31 N | 73 | 45 | E |
| R Greenwich, ditto, England | 51 | 28 40 N | | | |

Gomono

| | | Latitude. | Longitude. |
|---|---|------------|---------------|
| R | Gomono Island, Pitts Passage | 1 55 S | 128 2 E |
| R | Island de Gronais, Port Louis | 47 38 0 N | 3 26 W |
| T | Goree Island, Africa, Atlantic Ocean | 14 40 10 N | 17 25 W |
| T | Gaby, Asia, New Guinea | 0 6 0 S | 126 23 45 |
| T | St. Georges Isle, Europe, Azores | 38 39 N | 28 0 W |
| T | St. George Town, America, Bermudas | 32 45 N | 63 35 W |
| T | St. Georges Cape, Asia, New Britain | 4 53 30 S | 153 8 45 |
| T | Gibraltar, Europe, Spain | 36 5 30 N | 5 42 W |
| T | Gomera Isle, Africa, Canaries | 28 5 40 N | 17 8 W |
| D | Goat Island near Luconia. | 13 55 N | 120 2 E |
| R | Gillolo, North Point, Molluca Passage | 2 20 N | 128 10 E |
| R | Gunongapic Peak, Straits Sapy H. | 8 5 S | 119 26 E |
| R | Le Havre, Europe, France | 49 29 9 N | 0 7 E |
| R | Cape le Hogue, Europe, France | 49 44 40 | 1 56 W |
| R | St. Helena Island, South Atlantic Ocean | 15 56 0 S | 15 49 W |
| T | Hanglip Cape, Africa, Caffres | 34 16 S | 18 44 E |
| T | Herveys Isle, Asia, Pacific Ocean | 19 17 S | 158 48 W |
| T | Hinchinbroke Island, Asia, ditto | 17 25 S | 168 38 E |
| T | Hoai-Nghan, Asia, China | 33 34 40 N | 118 49 30 E |
| T | Hoods Isle, Asia, Pacific Ocean | 9 26 S | 138 52 W |
| T | Horn, Cape, Terra del Fuego | 55 58 30 S | 67 26 W |
| T | Howes Isle, Asia, Pacific Ocean | 16 46 30 S | 154 6 40 W |
| T | Huahine Island, Asia, ditto | 16 44 S | 151 6 W |
| R | Haycock Island, Coast of Borneo | 2 14 N | 109 15 E |
| R | Holy Spirits, easternmost ditto | 1 3 N | 107 57 E |
| R | Hog Islands, Straits Sunda | 5 52 S | |
| R | Hagedis Island near Bouton I. | | 122 55 E |
| R | Java Head, west end | 6 48 S | 105 9 E |
| R | Java, SE. end | 8 39 S | 114 40 E |
| R | Islamabad, Bengal | 22 20 N | 91 55 E |
| R | Judda, Red Sea | 21 29 N | 39 22 E |
| R | Rio Janeiro, America, Brazil | 22 54 0 S | 42 44 0 W |
| T | Iranami Isle, Asia, Pacific Ocean | 19 31 S | 170 21 E |
| T | Isle of Pines, Asia, Pacific Ocean | 22 38 S | 167 38 E |
| T | Kidgerree, Asia, India | 21 48 N | 88 50 15 E |
| R | Kanary Island, Pitt's Passage | 1 44 S | 129 54 E |
| R | Kannecoongan Point, Macassar Strait | 1 14 N | 119 50 E |
| D | Kenney Battoo, Borneo. | 20 6 2 N | 116 42 30 E |
| R | Ladrone Grand, Coast of China | 22 57 N | 113 41 E |
| R | Lema Grand, ditto | 22 3 N | 114 14 E |
| R | Lincoln Shoal ditto | 16 29 N | 113 10 E |
| R | Shoals to the eastward of ditto | 17 7 N | 112 47 E |
| R | Lingen Island, east point | 21 S | 104 48 E |
| R | Linting, China River | 22 24 30 N | |
| R | Lubeck, Borneo Sea | 5 49 S | 112 40 E |
| R | Lucepara Island, Straits of Banca | 3 12 20 S | 106 6 E |
| R | Lord North Island, Pacific Ocean | 3 7 0 N | |
| R | Laguillas or Anguillas Cape, Africa | 53 0 S | |
| R | Laut, great Pulo, south Point | 4 0 S | 117 24 Ditto, |

| | | Latitude. | Longitude. |
|--|----|------------|-------------|
| Laut, great, Pulo, NE point | | 3 20 S | |
| Little Laut Island, northernmost near Borneo | | 4 37 S | |
| Ditto ditto, southernmost ditto | | 4 54 S | |
| Laguna, Teneriff | | 28 28 57 N | 16 18 W |
| Lisbon, Europe, Portugal | | 38 42 25 N | 9 9 59 W |
| | M. | | |
| R Maccao Town, China | | 22 12 N | 113 30 E |
| R Macclesfield Bank, eastern edge, China Sea | | | 114 51 E |
| R Ditto extreme latitude from | | 15 17 N | |
| | to | 16 10 N | |
| R Middleburg Shoal, China Sea | | 9 3 N | 108 57 E |
| R Manilla, Jap. Sat. Island Luconia | | 14 36 N | 120 53 E |
| D Mongalloom, Coast of Borneo | | 6 10 N | 115 37 30 E |
| R Monopin Hill, Island Banca | | 2 2 S | 105 6 E |
| R Moncap, Pulo, Coast of Borneo | | 3 3 S | |
| R Motir Island, Moluccas | | 0 30 N | |
| R Maragolang Islands, Straits of Macassar | | 3 37 S | |
| R Moreelles, near the south point of Borneo | | 4 23 S | |
| R Middle Island, Saylayer Straits | | 5 39 S | 120 48 E |
| R Mabo Cape, Island Battanta | | 0 57 S | 130 49 E |
| R Macassar, Island Celebes | | 5 9 S | 119 48 45 E |
| R Myfole Island, Pitt's Passage | | 1 54 S | 129 55 30 E |
| R Marrier Island, Pacific Ocean | | 4 17 N | |
| R Matelotas Islands ditto | | 8 35 N | |
| R Madeira, Funchall, Atlantic Ocean | | 32 38 30 | 17 6 W |
| R Madras, Fort St. George | | 13 4 45 N | 80 23 E |
| R Cape Mons | | 25 7 30 N | 65 49 E |
| R Mauritius, Port Lewis, Indian Ocean | | 20 9 45 S | 57 29 E |
| R St. Mary, Scilly, English Channel | | 49 57 N | 6 43 E |
| R Masulipatnam, India | | | 81 16 E |
| R Madagascar, south point, Cape St. Mary | | 26 27 S | 45 41 E |
| T Middleburg Isle, Asia, Pacific Ocean | | 21 20 30 S | 174 34 W |
| T Montague Isle, Asia, ditto | | 17 26 S | 168 31 30 E |
| T Monument, the, Asia, ditto | | 17 14 15 S | 168 38 15 E |
| T Morgui, Asia, Siam | | 12 12 N | 98 8 45 E |
| R Mayo Island, south point, Cape de Verdes | | 15 6 N | 23 10 W |
| | N. | | |
| R Natunas, the northernmost, China Sea | | 4 51 S | 107 52 E |
| R Notuna, grand, ditto | | 4 12 S | 108 14 E |
| | | 3 58 S | 108 E |
| R Natunas, southernmost ditto | | 3 3 | 109 9 E |
| R Ditto, east Island, ditto | | 2 42 S | 109 41 E |
| R Ditto, west Island, ditto | | 2 44 S | 108 54 E |
| R Ditto, southernmost, called Sapata, ditto | | 2 28 S | 10 14 E |
| R Nanka Islands, Straits of Banca | | 2 30 S | 105 41 E |
| R New Island, near Java | | 10 47 S | 121 32 E |
| R North Cape, Island Moratay, Pacific Ocean | | 2 38 N | 122 50 E |
| R New Holland, NW point, Indian Sea | | 21 6 S | 113 10 E |
| R New Holland, in Latitude | | 22 40 S | 112 26 E |
| R Negrals Cape | | | 94 27 E |
| R Nicobar, Great Island, | | | 94 21 E |
| R Norfolk Island, South Pacific Ocean | | 29 1 45 S | 168 10 E |
| R Negapatnam, Coast of Coromandel | | 10 50 N | |
| T Ningpo, Asia, China | | 29 57 45 N | 120 18 E |

X x x

Cape

| | | Latitude | Longitude. |
|----|---|------------|-------------|
| O. | | | |
| R | Cape Ortagal, Europe, Spain | 43 46 37 N | 7 38 W |
| T | Oaitipeha Bay, Asia, Otaheite | 17 45 45 S | 149 14 20 W |
| T | Ochoz, Asia, Tartary | 59 20 10 N | 143 12 30 E |
| T | Ohamanino Harbour, Asia, Uliateah | 16 45 30 S | 151 38 5 W |
| T | Orenburg, Asia, Tartary | 51 46 N | 55 9 30 E |
| T | Orsk, Asia, Tartary | 51 12 30 N | 58 32 30 E |
| | Opporto, Europe, Portugal | 41 10 N | 8 27 10 W |
| P. | | | |
| R | Prater's Shoal, NE point, China Sea | 20 52 N | 116 47 E |
| R | Ditto, NW point, ditto | 20 52 N | 116 34 E |
| R | Ditto, SE point, ditto | 20 38 N | 116 46 E |
| R | Ditto, SW point, ditto | 20 39 N | 116 35 E |
| R | Ditto, Island ditto | 20 47 N | 116 37 E |
| R | * Peaked Island, Coast of Borneo | 1 4 S | 109 9 E |
| R | * Purling or St. Barbes Island, ditto | 0 4 N | 107 30 E |
| R | Pisang Pulo, Pitt's Passage | 1 28 S | 129 14 E |
| R | Popa Pulo, south point, ditto | 1 12 S | 130 11 E |
| R | Pater Nosters, the northernmost, Straits Macassar | 2 0 N | |
| R | Ditto, southernmost ditto | 2 50 S | |
| R | Paffier, Borneo | 1 50 S | |
| R | Pelew or Peeloo Island, northernmost, Pacific Ocean | 8 13 N | 133 45 E |
| R | Pelew Island, south point, northernmost | 6 55 N | 133 20 E |
| R | Peak of Teneriffe, Canary Island | 28 16 N | 16 35 41 W |
| R | — Laguna, ditto | 28 28 57 N | 16 18 W |
| R | Palma, north point, ditto | 28 51 15 N | 17 48 45 W |
| R | Ditto, west point, ditto | 28 46 0 N | 18 4 30 W |
| R | Ditto, south point | 28 32 0 N | 17 54 45 W |
| R | Port Praya, St. Jago, Cape de Verd | 14 53 N | 23 33 W |
| R | Peak Fogo, ditto | 14 57 N | 24 25 W |
| R | Pico Azoris, Europe | 38 20 40 N | 28 26 W |
| R | Point Palmiras, India | 20 44 N | 87 21 E |
| R | Point de Gaul, Island Ceylon | 6 6 N | 80 30 E |
| R | Pondicherry, Coast Coremandel | 11 41 55 N | 79 50 E |
| R | Pulo Pera, Straits Malacca | 5 43 N | 99 3 E |
| R | Pulo Verura or Verella, ditto | 3 48 N | 99 41 E |
| R | Pulo Pinang, ditto | 5 24 N | |
| R | St. Pierre, west coast Borneo | 2 14 S | 109 15 E |
| R | St. Paul's Island, Indian Ocean | 37 51 S | 77 42 E |
| R | Pekin, City, China | 39 54 30 N | 116 24 E |
| R | Par's, Observatory, France | 48 50 15 N | 2 21 15 W |
| R | Point Pedro, Island Ceylon | 9 50 N | |
| R | Porta Nova, Coast of Coromandel | 11 32 N | |
| R | Pulo Rondo, Straits of Malacca | 5 57 N | 95 14 E |
| T | Palliser Cape, Asia, New Zealand | 41 38 S | 175 23 12 E |
| T | Pickergill's Harbour, Asia, ditto | 45 47 27 S | 166 18 9 E |
| Q. | | | |
| | Quiros Cape, Asia, New Hebrides | 14 56 8 S | 167 20 E |
| | Quito, Am. Peru | 0 13 17 S | 77 55 W |
| R. | | | |
| R | Ragged Point, east C. of Borneo | 2 35 S | 117 41 40 E |
| R | River's Cape, north Co. of Celebes | 1 15 N | 121 23 E |
| R | Rio Janeiro, Coast Brazil, America | 22 54 S | 42 44 W |
| R | Recif, Brazil, America | 8 10 S | 35 35 W |
| | Rochelle, Europe, France | 46 9 21 N | 1 9 55 W |

Rochester

| | | Latitude. | Longitude. |
|---|---|------------|-------------|
| | Rochfort, Europe, France | 46 2 34 N | 0 58 34 W |
| | Rock of Lisbon, Europe, Portugal | 38 45 30 N | 9 35 30 W |
| | Rotterdam Island, Asia, Batavia | 20 16 30 S | 174 30 30 W |
| | S. | | |
| R | Sapata Pulo, China Sea | 10 1 30 N | 108 55 E |
| R | Scarborough Shoal, ditto | 14 58 N | 116 45 E |
| | and 15 30 N | | |
| R | Soolo Temontanges, Archipelago | 5 57 N | 120 53 30 E |
| R | Soolo, Tulyan | 5 57 N | 121 14 30 E |
| R | Soloan Island, near Samar | 10 49 N | |
| R | Seven Islands, near Banka | 1 10 S | |
| | and 1 26 S | | |
| R | Sanga, Boola Bay, Island Banka | 1 43 44 S | 105 21 E |
| R | Shoal Water Island, to southward of Billitore | 3 22 30 S | 107 12 E |
| R | Ditto, ditto | 3 20 30 S | 107 13 15 E |
| R | St. Michael's Shoals and Islands, Mendoro Sea | 7 37 S | 118 31 E |
| R | Sumatra, south point, Straits Banka | 2 59 40 S | 105 56 E |
| R | Souroutow, north part, Carimata Passage | 1 38 S | 108 43 E |
| R | St. Clement's Bank ditto | 3 0 S | |
| R | Solomba Great, Borneo Sea | 5 28 S | 114 29 E |
| R | Solomba Little, ditto | 5 12 S | 114 24 E |
| R | Sulatan Point, south Cape, Borneo | 4 9 S | 115 42 E |
| R | Seven Islands, Straits of Macassar | 30 N | |
| R | Sanguay or Sanger Islands, north point, Sooloo Sea | 3 48 N | 125 27 E |
| R | Semao Island, south point, near Timor | 10 15 S | |
| R | Siao Island, south point, Sooloo Sea | 2 35 N | 125 31 E |
| R | Sumbawa Island, southwest end, Indian Sea | 8 49 S | 116 18 E |
| R | Ditto, south east end | 8 33 S | 119 30 E |
| R | Salayer Island, north point, Straits of Salayer | 5 49 S | 120 46 E |
| R | St. Johns Island, north end, near Magindanao | 8 21 N | |
| R | Savu Island, middle between Timor and Sandlewood Isl. | 10 35 S | 122 30 E |
| R | Savu New Island, to westward of Savu | 10 47 S | 121 32 E |
| R | South Island, Straits of Bouton | 5 46 S | 122 55 E |
| R | Salibobo Islands, Sooloo Sea | 3 48 N | 126 33 E |
| R | St. David's Islands, Pacific Ocean | 1 10 N | 134 30 E |
| R | St. Joannes Islands, ditto | 6 48 N | |
| R | Sandlewood Island, south part, near Straits of Sapy | 10 22 S | |
| R | Ditto, the westernmost or bluff point of ditto | 9 42 S | 119 15 E |
| R | Salvages Island's, Canary Island | 30 8 N | 16 9 W |
| R | Cape Spartel, Coast Africa | 35 42 10 N | 5 54 W |
| R | Speaker Bank, Indian Ocean | 4 45 S | 72 57 E |
| R | Surat, India | 21 10 N | 72 22 E |
| R | Start Point, Europe, England | 50 9 N | 3 51 15 W |
| | San'twich Island, Asia, Pacific Ocean | 17 41 S | 168 33 E |
| | Cape St. Sebastian, Africa, Madagascar | 12 30 S | 46 25 E |
| T | Shepherd's Isles, Asia, Pacific Ocean | 16 58 S | 168 42 E |
| T | Siam, Asia, India | 14 18 N | 100 50 E |
| T | Singham-fu, Asia, China | 34 16 30 N | 108 43 45 E |
| | T. | | |
| R | Timoan Island, north point, China Sea | 3 N | 104 16 E |
| R | Tinboza Island, C. of Haynan | 18 43 N | 110 36 E |
| | * Taya Island, near Banka | 0 45 S | |
| | * Toty Pulo, ditto | 58 S | 105 34 E |
| | * Table Island, west Coast of Borneo | 50 N | 109 9 E |

X x x 2

• Table

| | | Latitude. | Longitude. |
|---|--|------------|-------------|
| | * Table Island, the southermost Island, near it | 44 N | 108 54 E |
| R | Ternate, Principal Molucca | 54 N | 127 32 E |
| R | Tidore, ditto | 43 N | 127 37 E |
| R | Tryal Rocks, Dan. account, India Sea | 20 40 S | 120 50 E |
| R | — Dutch account, ditto | 19 30 S | 120 50 E |
| R | Tonyn's Islands, southermost, near Salayer | 6 47 S | 120 50 E |
| R | Timor Laut, south point, Banda Sea | 8 15 S | 131 50 E |
| R | Timor Island, south point, east part of Indian Sea | 10 23 S | 124 55 E |
| T | Table Island, Asia, New Hébrides | 15 38 S | 167 7 E |
| T | Tanna, Asia, Pacific Ocean | 19 32 25 S | 169 41 E |
| T | Taoukaa Isle, Asia, Pacific Ocean | 14 30 30 S | 145 9 30 W |
| T | Temontengis, Asia, Sooloo | 5 57 N | 120 53 30 E |
| T | Tonga Tabu Island, Asia, Pacific Ocean | 21 9 S | 174 46 W |
| T | Turtle Island, Pacific Ocean | 19 48 45 S | 177 57 W |
| | U. | | |
| T | Uliateah, Asia, Pacific Ocean | 16 45 S | 151 31 W |
| T | Ushant, Europe, France | 48 28 30 N | 5 4 33 W |
| | V. | | |
| R | Vele Rete Rock, near Formosa | 21 45 N | 121 8 E |
| R | Vanfittart's Rock, near Banka | 2 11 24 S | 106 44 E |
| R | Vanfittart's Wreck, Island, near Banca | 2 9 6 S | 106 19 E |
| | W. | | |
| T | Whitsuntide Isle, Pacific Ocean | 15 44 20 S | 168 20 15 E |
| R | Wampoa Town, China | 23 5 45 N | |
| R | Fort William, Asia, Bengal | 22 34 45 N | 88 29 30 E |
| R | South Watcher, near Batavia | 5 41 45 S | 106 42 43 E |
| R | Weywongey, Body of Pitt's Passage | 4 3 S | |
| R | Wincooper's Point, Island Java | 7 28 S | 106 32 E |
| R | North Watcher, near Straits Sunda | 5 12 30 S | 106 27 E |
| | X. | | |
| R | Xulla Befsy, South Point, Pitt's Passage | 2 28 S | 126 25 30 E |
| | Y. | | |
| R | Yowl Island, near Weyoogee | 0 50 N | |
| | | 0 22 N | |

LATITUDES and LONGITUDES with the Variations of the Compass observed on a Passage from BOMBAY to ENGLAND in the Spring of 1784, through the MOSAMBIQUE CHANNEL, along the SE Coast of AFRICA, to the CAPE of GOOD HOPE and home to the CHANNEL.

| Variation | Lat. | Long. |
|-----------|-----------|-----------|
| 1° 36' W | 14° 51' N | 67° 09' E |
| 3 11 | 13 39 | 65 29 |
| 5 48 | 8 30 | 58 50 |
| 6 30 | 6 50 | 57 12 |
| 7 30 | 3 45 | 54 15 |
| 9 41 | 1 44 | 52 15 |
| 11 14 | on line | 50 27 |
| 13 36 | 3 20 S | 47 00 |
| 14 56 | 4 34 | 45 51 |
| 17 18 | 8 12 | 45 43 |
| 19 24 | 10 40 | 41 30 |
| 19 58 | 12 30 | 41 22 |
| 21 52 | 14 29 | 41 16 |
| 25 14 | 21 15 | 37 10 |
| 26 17 | 22 15 | 36 40 |
| 25 55 | 23 46 | 35 50 |
| 25 34 | 26 50 | 32 46 |
| 26 30 | 30 13 | 31 31 |
| 24 40 | 34 57 | 22 33 |
| 24 24 | 34 19 | 23 30 |
| 24 22 | 34 47 | 22 30 |
| 20 44 | 28 39 | 10 40 |
| 20 36 | 27 20 | 8 12 |
| 17 07 | 25 45 | 6 30 |
| 16 40 | 23 54 | 4 45 |
| 13 45 | 13 45 | 8 04 W |
| 13 27 | 12 15 | 10 00 |
| 12 13 | 9 20 | 12 15 |
| 11 35 | 7 58 | 14 13 |
| 9 58 | 5 26 | 15 55 |
| 11 00 | 1 23 | 18 30 |
| 9 02 | 6 20 N | 22 28 |
| 7 00 | 12 40 | 27 35 |
| 7 36 | 22 00 | 33 55 |
| 8 24 | 24 34 | 34 30 |
| 18 23 | 36 00 | 38 00 |
| 17 18 | 39 20 | 37 36 |
| 18 23 | 40 50 | 38 00 |
| 24 48 | 50 14 | 14 30 |
| 24 41 | 50 00 | 9 30 |
| 24 30 | 49 00 | 5 15 |

LATITUDES and LONGITUDES with the Variations of the Compass, observed in the Spring of the Year 1788, in a Voyage to the Coast of GUINEA, in His Majesty's Ship Adventure.

| Variation | Lat. | Long. | Variation | Lat. | Long. |
|-----------|--|-----------|-----------|----------|-----------|
| 24° 51' W | 42° 48' N | 12° 40' W | 13° 30' W | 3° 18' N | 15° 14' W |
| 20 47 | 35 52 | 15 33 | 13 59 | 3 34 | 15 24 |
| 19 21 | 33 32 | 16 20 | 14 19 | 3 41 | 15 32 |
| 17 17 | 32 30 | 16 30 | 13 35 | 4 14 | 16 06 |
| 17 17 | 31 38 | 16 25 | 13 28 | 5 35 | 16 48 |
| 19 32 | 31 00 | 16 13 | 13 02 | 5 45 | 17 03 |
| 18 23 | 30 00 | 16 12 | 12 28 | 5 54 | 17 28 |
| 17 12 | { at anchor in St. Cruz Road in Island Theneriff | | 12 11 | 6 18 | 17 30 |
| 15 43 | 24° 53' N | 16° 17' W | 11 00 | 6 15 | 18 04 |
| 15 09 | 24 06 | 16 32 | 12 28 | 6 06 | 19 05 |
| 13 35 | 20 07 | 17 35 | 12 13 | 6 24 | 20 15 |
| 14 42 | 16 30 | 17 35 | 11 36 | 7 46 | 23 25 |
| 12 58 | 14 50 | 17 58 | 10 58 | 8 33 | 24 22 |
| 12 15 | 11 58 | 18 25 | 9 33 | 9 04 | 25 52 |
| 12 49 | 9 38 | 17 53 | 9 18 | 9 53 | 27 15 |
| 13 22 | 9 00 | 17 31 | 8 32 | 11 11 | 28 16 |
| 12 14 | 7 57 | 16 25 | 7 43 | 12 44 | 29 08 |
| 15 27 | 5 46 | 10 37 | 8 33 | 15 49 | 31 13 |
| 14 30 | 4 06 | 8 24 | 7 08 | 20 08 | 31 30 |
| 16 17 | 4 38 | 6 50 | 11 20 | 23 30 | 31 00 |
| 16 03 | 4 46 | 5 57 | 11 23 | 24 06 | 31 17 |
| 15 22 | 5 03 | 5 15 | 12 13 | 25 18 | 31 37 |
| 17 38 | 5 07 | 4 36 | 12 35 | 25 47 | 31 44 |
| 17 12 | 5 00 | 3 24 | 12 24 | 26 22 | 32 24 |
| 16 28 | 4 57 | 2 48 | 11 17 | 27 18 | 30 55 |
| 16 31 | { in Comind Fort in Cape Coast Castle | | 10 49 | 27 36 | 29 59 |
| 15 17 | 3 02' N | 2° 00' W | 12 42 | 28 22 | 29 14 |
| 15 32 | 0 40 | 10 00 | 13 21 | 29 19 | 27 23 |
| 14 26 | 1 32 | 13 00 | 14 37 | 31 12 | 26 13 |
| 14 29 | 1 40 | 14 03 | 15 51 | 32 23 | 24 34 |
| 12 32 | 3 01 | 15 17 | 16 09 | 33 20 | 24 23 |
| 12 12 | 3 13 | 15 17 | 17 00 | 35 30 | 23 36 |
| | | | 18 11 | 36 14 | 23 20 |
| | | | 17 03 | 36 25 | 23 20 |
| | | | 15 31 | 36 30 | 23 16 |

LATITUDES

*LATITUDES and LONGITUDES with the Variations
of the Compass, observed on board His Majestys
Ship Marlborough, from November 1790 to
February 1791, in a Voyage to BARBADOES.*

| Variation | Lat. | Long. | Variation | Lat. | Long. |
|-----------|-----------|-----------|----------------------------------|-----------|-----------|
| 22° 37' W | 40° 46' N | 11° 58' W | 1° 19' E | 13° 13' N | 55° 22' W |
| 22 02 | 39 08 | 13 10 | 2 03 | 13 12 | 56 14 |
| 21 53 | 36 38 | 14 10 | 2 11 | 13 04 | 57 50 |
| 19 02 | 31 15 | 18 41 | 2 21 in Carlisle Bay, Barbadoes. | | |
| 17 23 | 28 57 | 20 43 | 0 58 | 15 44 | 59 04 |
| 17 52 | 28 03 | 21 10 | 0 48½ | 17 21 | 59 12 |
| 17 28 | 27 53 | 21 23 | 0 18½ W | 21 50 | 60 22 |
| 16 49 | 25 34 | 21 20 | 1 00 | 24 14 | 61 30 |
| 17 16½ | 23 09 | 23 27 | 0 21 | 25 20 | 61 57 |
| 17 41 | 23 02 | 23 37 | 0 31 | 26 08 | 61 25 |
| 14 46 | 22 22 | 25 01 | 1 28 | 26 28 | 61 23 |
| 14 44 | 21 26 | 26 00 | 3 30 | 28 44 | 60 00 |
| 11 16 | 18 27 | 29 22 | 6 08 | 32 28 | 55 16 |
| 9 49 | 17 24 | 31 32 | 8 14 | 33 14 | 51 57 |
| 9 22 | 16 43 | 34 09 | 10 55 | 34 04 | 47 20 |
| 6 38 | 16 18 | 37 25 | 14 20 | 34 56 | 39 26 |
| 4 47 | 15 56 | 40 20 | 14 56 | 35 58 | 38 06 |
| 3 17 | 15 34 | 43 08 | 16 44 | 37 19 | 36 58 |
| 2 10 | 15 18 | 45 00 | 18 14 | 34 58 | 32 44 |
| 1 48 | 15 00 | 47 43 | 22 39 | 42 41 | 28 18 |
| 0 44 | 14 42 | 50 30 | 22 17 | 43 45 | 26 40 |
| 0 05 E | 14 06 | 52 41 | 24 19 | 46 13 | 19 07 |

*Variations observed in different
Parts in the ENGLISH and
IRISH CHANNELS, in the
Years 1790 and 1791.*

| | | |
|--------------|--------------|-------------------------------------|
| 25° 56' 5" W | 52° 8' 30" N | Chuk Point near Waterford. |
| 26 43 15 | 51 50 32 | Cove of Cork near the Fort. |
| 24 56 02 | 50 23 00 | Tar Point near Ply- mouth. |
| 22 48 36 | 51 16 | Downs. |
| 23 55 45 | 50 47 | Gilkicker Point near Golport. |

The above Variations were observed by myself in the different Voyages specified, preceding the Observations, the Longitudes were carefully ascertained by Lunar Observations, and intermediately by Time pieces, and wherever the Longitudes are omitted, the Variations were observed on shore, except in Santa Cruz Road, in the Island of Teneriffe, where both Latitude and Longitude has been well ascertained, the \rightarrow ing place in the Island of Ascension lies in Latitude $7^{\circ} 58' S$. Longitude $14^{\circ} 13' W$. by Lunar Observation, the Variation in 1784, taken with great care was $11^{\circ} 35' W$.

CHARLES ROBERTS, ROYAL NAVY.

OBSERVATIONS of the VARIATION of the COMPASS near Land; communicated to the EDITOR
by several COMMANDERS and OFFICERS in the Service of the Honourable United
EAST-INDIA COMPANY.

1776. At Ascension Isle, in the Southern Ethiopic Ocean. Variation $10^{\circ} 45' W.$

1776. At St. Augustin's Bay, in Madagascar Isle. Variation $23^{\circ} 30' W.$

1774. At Christova Isle, between Madagascar and the East Coast of Africa. Variation $21^{\circ} 10' W.$

1774. At Christmas Isle, in the Indian Ocean. Variation $2^{\circ} 52' W.$

1776. At Cape Good Hope, the South Point of Africa. Variation $21^{\circ} 0'.$

1776. At Goa, on the Malabar Coast, in the East-Indies. Variation $0^{\circ} 0'.$

1773. At Bourbon Isle, in the Indian Ocean. Variation $15^{\circ} 22' W.$

1767. At Bonavista Isle, one of the Cape de Verde Islands. Variation $10^{\circ} 20' W.$

1775. At the Great Bassas, off the Island Ceylon. Variation $1^{\circ} 28' E.$

1769. Off Cape Frio, near the Coast of South America. Variation $8^{\circ} 40' W.$

1760. At Flores, the westernmost of the Azor Islands. Variation $12^{\circ} 53' W.$

1776. At St. Helena, in the Southern Ethiopic Ocean. Variation $13^{\circ} 15' W.$

1769. At St. Jago, one of the Cape de Verde Islands. Variation $11^{\circ} 10' W.$

1773. At Cape Infant, on the South Coast of Africa. Variation $24^{\circ} 50' W.$

1774. At Joanna, one of the Comero Islands. Variation $19^{\circ} 22' W.$

1776. At Cape Lagullas, the Southernmost Cape of Africa. Variation $21^{\circ} 40' W.$

1776. Off Cape Natal, on the South Coast of Africa. Variation $24^{\circ} 30' W.$

1774. At the Islands St. Paul and Amsterdam, in the Southern Part of the Indian Ocean. Variation $20^{\circ} 0' W.$

1773. At Porto Sancto Isle, in the Atlantic Ocean. Variation $17^{\circ} 15' W.$

1773. At Kelay Isle, in the Indian Ocean, off the Malar Coast. Variation $1^{\circ} 14' W.$

1776. At Mosambique, on the East Coast of Africa. Variation $22^{\circ} 0' W.$

1768. At Mauritius Isle, in the Indian Ocean. Variation $13^{\circ} 52' W.$

1771. At St. Matthew's Isle, near the Equinoctial, in the Ethiopic Ocean. Variation $7^{\circ} 24' W.$

1773. At Mayotta, one of the Comero Islands. Variation $18^{\circ} 34' W.$

1772. At the Island Rodrigues, in the Indian Ocean. Variation $10^{\circ} 37' W.$

1776. At Cape Talhado, near Blaise Bay, on the South Coast of Africa. Variation $22^{\circ} 30' W.$

1776. At Tristan de Acunha Isles, in the Southern Ocean. Variation $5^{\circ} 0' W.$

1772. At Table Bay at Cape Good Hope. Variation $20^{\circ} 40' W.$

1773. At Teneriffe, one of the Canary Islands. Variation $16^{\circ} 20' W.$

1768. At Trinidad Isle, off the Coast of Brazil, in South America. Variation $0^{\circ} 37' E.$

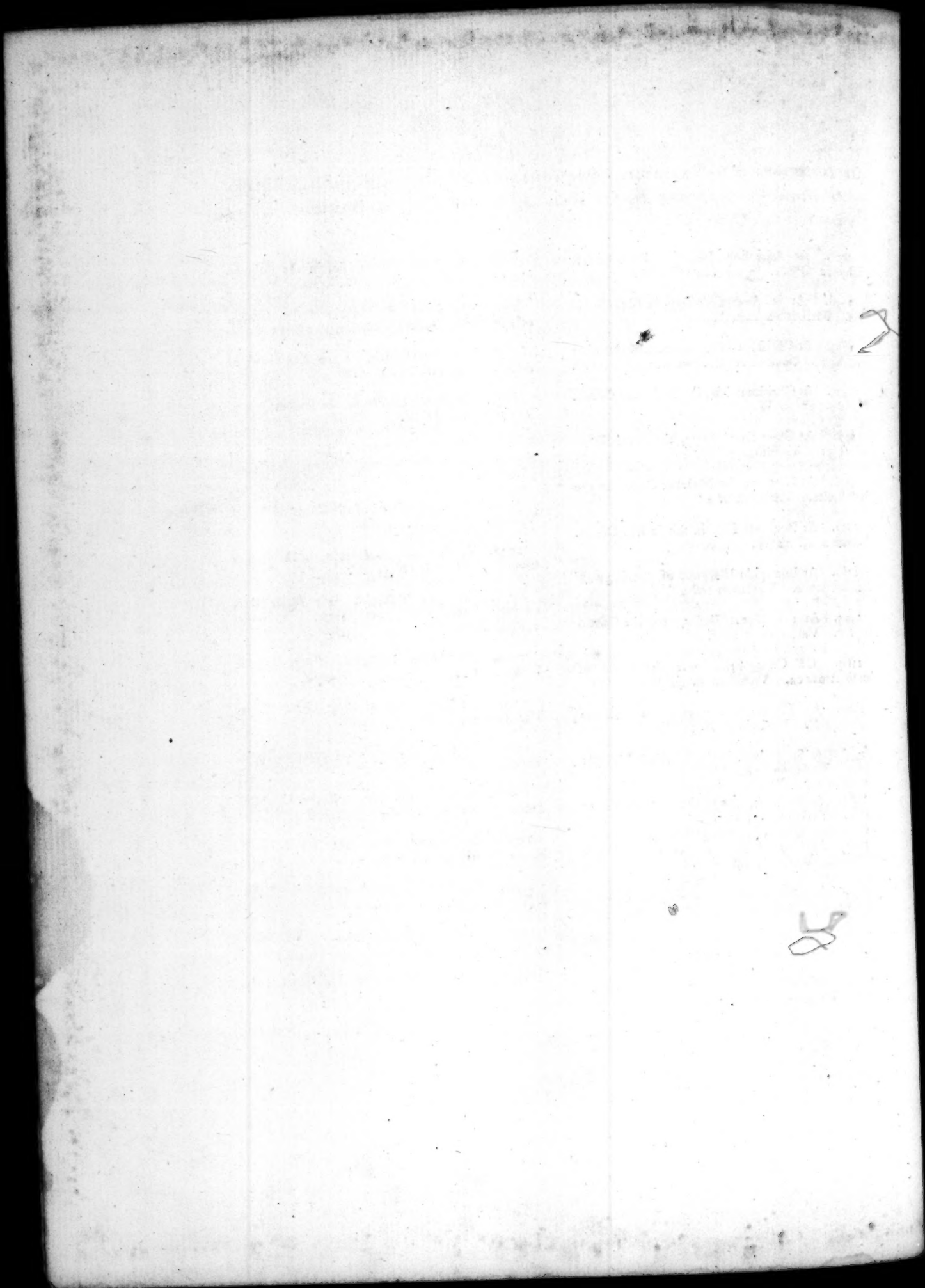
1776. At Saldanha Bay, near Cape Good Hope. Variation $21^{\circ} 0' W.$

1776. At the Island of Sal, one of the Cape de Verde Islands. Variation $11^{\circ} 23' W.$

1772. At the Straits of Sunda. Variation $1^{\circ} 25' W.$

1773. At Sandy Island, off St. Augustine's Bay, Madagascar Isle. Variation $24^{\circ} 1' W.$

1776. At Cape de Verde. Variation $13^{\circ} 30' W.$



*REMARKS upon the PRECELLA BANK, by Mr. RICH. HALL GOWER,
in the Ship Worcester, 1790.*

WEDNESDAY, the 18th day of August, in Longitude 44° East, and Latitude $18^{\circ} 34'$ South. On the 19th at 2 P. M. saw the Westernmost of the Barren Islands, EbS, distance about 6 Leagues, from which Bearings, its Latitude is $18^{\circ} 26'$ South, and Longitude $44^{\circ} 19'$ East. On the 20th at 2 P. M. the Water appearing discoloured, sounded, and had ground at 11 fathoms, in Longitude $43^{\circ} 51'$ East, and Latitude $18^{\circ} 3'$ South, tacked and stood to the Westward, and in 4 miles run, had from 12 to 20 fathoms, and then no Ground.

On the 21st, stood to the Eastward, to get upon the Precella Bank, and at 2 P. M. got round in 22 fathoms, in Latitude $17^{\circ} 44'$ S. and Longitude $43^{\circ} 37'$ East, after that 21, 17, 15, 19, 26, 46, and 54 fathoms, in 7 miles run to the Westward. We now stood to the Northward, keeping upon the Edge of the Bank, which seemed perfect and steep, for by the least slant to the Westward, we had deep Water; and at 4 past 10 A. M. saw the Chesterfield Shoal a-head, distance about 11 miles, we were then steering NE, hauled off and steered North. At noon, we were in Latitude $16^{\circ} 18'$ South, and Longitude $43^{\circ} 57'$ East, the Chesterfield Shoal bore $SE\frac{1}{4}E$, distance 9 miles, from which bearings its Latitude is $16^{\circ} 19'$ South, and Longitude $44^{\circ} 7'$ East.

In the Draught, I have given the quality of the bottom, whenever an opportunity offered of looking at the lead.

I have given a View of the Chesterfield Shoal, when NNE, which will serve all round, it being nearly one and the same at all bearings. A Black Rock in the middle of a sand, surrounded by breakers. If it was longer one way than the other, to us it appeared most so, North and South, though the Chesterfield's Journal mentions East and West. The Chesterfield, when 3 leagues to the Westward, had no soundings at 40 fathoms, and where her Track crosses ours, they agree in soundings, but as no opportunity offered with us, of trying the

Y y y

edge

edge of the bank off the Shoal to the Westward, I take the Chesterfield's Limits as genuine. The 22d at half past 4, we had from 19 to 20 fathoms, then no ground at 30, 40 and 60 fathoms.

I have every reason to believe, the Longitude of this draught to be perfectly correct, as it was gained by the mean of many Lunar Observations, corrected by an excellent Watch, and found to agree within a few miles of each other. While on the bank, we had a trifling Northeasterly Current, of about 6 miles $\frac{1}{2}$ Day.

St. Christopher's Isle, is laid down according to its bearings and distance from the Chesterfield Shoal, as given by the Chesterfield's Log-Book.

Though the account here given of the Shoal, does not entirely agree in all points, with the account given through the Chesterfield's Journal, yet the Difference is such, as does not do away my Opinion, * it being no more than what the time might effect. In the Black Rock we agree, that is firm. In the length of the sand we disagree, that is shifting, and may have materially altered its form since the passing of the Chesterfield, or here we may have been deceived by the appearance, at the distance of 9 miles, and have given length to it in the direction of the Ship's Course. Our Latitudes too, differ a few miles, but not more than may arise from the difference of observers, together with a possible error in their calculation, which was made from the following noon, when the Shoal was not in sight.

RICH. HALL GOWER.

* Some persons having supposed it an Island not before discovered.

A CATALOGUE

*A CATALOGUE of the CHARTS described in this DIRECTORY,
which may be had with or without the Letter Press.*

N^o

1. **A** CHART of the Western, or Atlantic Ocean, with Part of Europe, Africa, and America.
2. Ditto of the Ethiopic Ocean, with Part of Africa, and South America.
3. Ditto of the Azores or Western Islands.
4. Ditto of the Canary and Madeira Isles, with the adjacent Coast.
5. Ditto of the Cape De Verd Islands, and the Neighbouring Coast.
6. Ditto of the Cape De Verd Islands, with a Plan of Praya Bay.
7. Ditto of the Bay and Harbour of Rio Janeiro in South America.
8. Ditto of the Cape of Good Hope and parts adjacent.
9. Ditto of False Bay and Simon's Bay.
10. Ditto of the Eastern Ocean, from Cape Good Hope to the Japan Isles.
11. Ditto of the South East Coast of Africa, from Cape Good Hope to Delagoa Bay.
12. Ditto of the East Coast of Africa, Madagascar Isle, the Inner Passage, and adjacent Isles.
13. Ditto of St. Augustin's Bay on Madagascar Isle, by W. Nichelson
14. Ditto of the Worcester's Track in the Mozambique Channel, in 1790.
15. Ditto of the Isles of Patte on the East Coast of Africa, with the Isles of Querimbo, Oybo and Matemo, on ditto, with a Chart of the North Part of the Island Madagascar
16. Part of the East Coast of Madagascar, from Manghabey-Bay to Plumb Island, with Foul Point Bay.
17. Plan of the principal Harbour and Town of the Island St. Maries, off the East Coast of Madagascar, with the Bay of Antongall.
18. Chart of the Islands in the Middle of the Indian Ocean.
19. Ditto of the Island Mauritius in the Indian Ocean.
20. Ditto of the Island Bourbon in Ditto.
21. Ditto of the Island Diego Roiz or Rodrigues in Ditto.
22. Draught of Mathewrin Bay on the North Side of the Island Diego Rayes, by W. Nichelson.
23. Chart of the Seychelles, Praslin, and other adjacent Isles.
24. Part of Africa, Arabia, Persia, and Indostan, the Gulphs of Arabia, Persia, Guzurat, and Manara, with Zeloan and the Laccadive and Maldiva Islands.
25. Arabian Gulph and Part of the Red Sea.
26. Chart of the Gulph of Persia.
27. Large Chart of Bombay Harbour, by W. Nichelson
28. Chart of the Coast of Guzurat, Concan, and Decan, with the Gulph of Cambay.
29. Ditto of the Coast of Canara and Malabar, with the Laccadivas Isles.
30. Ditto of the Coast of Malabar and Part of Coast of Coromandel, as far as Pondicherry, including Zeloan Isle.
31. Draught of the Great Bay, Back Bay, and Harbour of Trincomalay, on the Island Zeloan, by W. Nichelson
32. A Map and Chart of the Carnatic and Coast of Coromandel, 2 Sheets in French, by D'Anville.
33. Chart of the Coast of Coromandel.
34. Ditto of the Coast of Galconda, Orixá, and Bengal.
35. Ditto of the Northern Part of the Bay of Bengal, by Plaisted, Ritchie, and Roberts.
36. Map

36. Map and Chart of the Peninsula of India, from Guzurat to Arracan.
37. Ditto of Arracan, Ava, Pegu, Tavay, Tenasserim, Queda, and Part of Malayo, with Acheen Road and the Nicobar and Andaman Islands, in French.
38. Chart of Nicobar Islands, with a Plan of the Harbour between the Islands Nacavary, Soury, and Trincutte.
39. A General Chart of the Easternmost Part of the East Indies, from the Island of Zeloan to Amoy in China, with the adjacent Isles.
40. Chart of Part of Sumatra, and Malayo, with the Entrance and Straits of Malacca.
41. Ditto of the Straits of Malacca, 4 Sheets, by Mr. Herbert.
42. Ditto of the Seas, between the Straits of Banca and P^o Timoan, with the Eastern Part of the Straits of Malacca.
43. Ditto of the Straits of Dryon, 2 Sheets.
44. A Large Plan of Junk Seilon and the Parts adjacent, also the West Coast of the Island Sumatra, and Plan of Acheen Road with adjacent Islands.
45. East Coast of Sumatra, with the Entrance of the Straits of Sunda.
46. Chart of the Straits of Sunda, with part of the North Coast of the Island Java, as far as Batavia.
47. Ditto of the West End of the Island of Java, and part of Sumatra, with the Straits of Sunda, also Banca, Gaspar and Clements Straits.
48. Ditto of the Eastern Part of the Island of Java, with Part of Borneo and Straits of Bally.
49. Ditto of the Coast of Java, from Bantam to Batavia.
50. Ditto of some Islands between Borneo and Banca.
51. Ditto of the Straits of Bali, with the Soundings and Northern Adjacent Islands.
52. Ditto of the Coast of Malayo, Cambodia, Thiompa, with the Gulph of Siam.
53. Ditto of the China Seas, containing the Coasts of Thiompa, Cochin China, the Gulph of Tonquin, Coast of China, with the Philippine Islands, and Plan of Pulo Condore.
54. Draught of the Bay on the North West Side of the Island Timoan.
55. Ditto of the Bay on the South West Side of the Island Pulo Auore.
56. Chart of the Coast of China with the Island Formosa and the Piscadore Islands.
57. Plan of the Bay and Harbour of Subec, near Manilla.
58. Plan of the Great Bay of Manilla and Harbour of Cavita.

The following CHARTS (Price £1. 15.) with printed Directions, by Mr. George Robertson, may be had Separate or Bound up with the Directory.

1. A Chart from the Southern Natunas to the Islands Carimata and Souroutou; with those Islands only that were seen by the Fleet and laid down upon the Spot; with the Soundings and useful Views of the Island.
2. A particular Chart of the Clements and Gaspar Straits upon a large Scale.
3. A General Chart, six Inches to a Degree, comprehending from the Equator to the Straits of Sunda, and Eastward to Batavia, and from the Island Carimatta Westward to Lingin.
4. A Chart of the Straits of Allais, with Remarks for navigating them.
5. Dampier's and the Pitt's Straits, upon a large Scale, with Views of the Lands around them.
6. A Sheet of Views of particular Headlands and Islands.

| | | | |
|---|-------|-----|-----|
| Price of the Directory with Letter Press, in 2 Vols. | £. 6. | 6s. | 0d. |
| Ditto with Robertson's Charts included | 7. | 7. | 0 |
| Without the Letter Press in one Volume, with Robertson's Charts | 5. | 15. | 6 |
| Ditto without the Letter Press and Robertson's Charts | 4. | 14. | 6 |
| The Letter Press in one 4to Volume without the Charts | 1. | 11. | 6 |